IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS:	Wang *et al.*	CONFIRMATION NO.:	4607
APPLICATION NO.:	10/581,845	GROUP NO.:	Not yet assigned
FILING DATE:	June 5, 2006	EXAMINER:	Not yet assigned
TITLE:	System and Method Providing Enhanced Features for Streaming Video-On-Demand		

Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION TO PERMIT FILING A PATENT APPLICATION INCLUDING NON-SIGNING INVENTORS UNDER 37 C.F.R. § 1.47(a)

Sir:

Applicants hereby petition the Commissioner to permit the filing of the above-identified application on behalf of non-signing inventors Meng Wang, Jian Wang and Ying Luo, in accordance with 35 U.S.C. § 118 and 37 C.F.R. § 1.47(a).

Applicants submit herewith a Declaration executed by joint inventors Ignatius Chang and Peter Koats on behalf of the non-signing inventors.

Also submitted herewith is the fee of $200 for consideration of this petition, as required under 37 C.F.R. §§ 1.17(g) and 1.47(a). The Commissioner is authorized to charge any further required fees for this submission to Deposit Account No. 50-1721.

Last known addresses on non-signing inventors

Meng Wang
Citizenship: Canada
Last known address: 3027 Laurel Street
Vancouver, British Columbia V5Z 3T6
Canada

Jian Wang
Citizenship: China
Last known address: 104-7495 Sandborne Avenue
Burnaby, British Columbia V3W 4V4
Canada

Ying Luo
Citizenship: Canada
Last known address: 1012-1477 Mississauga Valley Boulevard
Mississauga, Ontario L5A 3Y4
Canada

Details of efforts to reach inventor Meng Wang

1. The present application claims priority to Application No. 10/727,857, filed December 4, 2003. Attached as Exhibit A is a copy of the decision according rule 1.47(a) status to Application No. 10/727,857, with respect to non-signing inventor Meng Wang. Meng Wang did not later join in the application.

2. Attached as Exhibit B is a copy of the petition, including Exhibits A to J, detailing the diligent efforts to reach Meng Wang which was filed in Application No. 10/727,857 on August 30, 2004.

3. Submitted herewith is a statement signed by Cecelia Lu, who has first hand knowledge of further diligent efforts to contact Meng Wang in April 2008. Attached as Exhibit 1 to Cecelia Lu's statement are copies of (1) instructions given to a courier by Cecelia Lu for contacting Meng Wang and (2) a statement by the courier that the attempt to contact Meng Wang was unsuccessful.

Details of efforts to reach inventor Jian Wang

1. The present application claims priority to Application No. 10/727,857, filed December 4, 2003. Attached as Exhibit A is a copy of the decision according rule 1.47(a) status to Application No. 10/727,857, with respect to non-signing inventor Jian Wang. Jian Wang did not later join in the application.

2. Attached as Exhibit B is a copy of the petition, including Exhibits A to J, detailing the diligent efforts to reach Jian Wang which was filed in Application No. 10/727,857 on August 30, 2004.

3. Submitted herewith is a statement signed by Cecelia Lu, who has first hand knowledge of further diligent efforts to contact Jian Wang in April 2008. Attached as Exhibit 2 to Cecelia Lu's statement are copies of (1) a letter addressed to Jian Wang from Cecelia Lu (2) a Canadapost transcript showing that the registered mail was returned to the sender as undeliverable.

Details of efforts to reach inventor Ying Luo

1. Submitted herewith is a statement signed by Cecelia Lu, who has first hand knowledge of the diligent efforts to contact Ying Luo in March and April 2008. Attached as Exhibit 3 to Cecelia Lu's statement are copies of (1) a letter addressed to Ying Luo from Cecelia Lu and (2) Canadapost transcripts showing that the registered mail was returned to the sender as undeliverable.

2. Attached as Exhibit 4 to Cecelia Lu's statement is a copy of an email sent to Ying Luo. No response to the email was received.

SUMMARY

In view of the diligent efforts to contact inventors Meng Wang, Jian Wang, and Ying Luo outlined above, it is respectfully submitted that these inventors cannot be reached and/or are unwilling to join in the application. Accordingly, Applicants respectfully request that this petition and rule 1.47(a) status be granted in the present application.

The Office is invited to contact the undersigned attorney to discuss any issues relating to this petition.

Respectfully submitted,

Date: April 30, 2008
Reg. No.: 58,343

/Karen A. Sinclair/
Karen A. Sinclair
Attorney for Applicants
Kirkpatrick & Lockhart Preston
Gates Ellis LLP
State Street Financial Center
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Boston, Massachusetts 02111-2950

Tel. No.: (617) 261-3216
Fax No.: (617) 261-3175

EXHIBIT A

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

William R. Coenen, III
Kean, Miller, Hawthorne, D'Armond,
McCowan & Jarman, L.L.P.
P.O. Box 3513
Baton Rouge, LA 70821

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OFFICE OF PETITIONS

In re Application of
M. Wang, J. Wang, Luo, and Cheng
Application No.: 10/727,857
Filed: December 4, 2003
Attorney Docket No: 17557-0
For: CONTROL MECHANISM FOR ENHANCED FEATURES FOR STREAMING VIEDO ON DEMAND SYSTEMS

: DECISION ACCORDING
: RULE 47(a) STATUS

This is in response to the petition under 37 CFR 1.47(a), filed August 30, 2004, certificate of mailing dated August 24, 2004.

The petition is **GRANTED**.

The above-identified application and papers have been reviewed and found in compliance with 37 CFR 1.47(a). This application is hereby accorded Rule 1.47(a) status.

The above-cited application was filed on December 4, 2003, without a properly executed declaration. On February 27, 2004, the Office of Initial Patent Examination mailed a Notice to File Missing Parts of Nonprovisional Application requiring a declaration signed by all named inventors and a surcharge of $130.00 for the late filing of the declaration. On August 30, 2004, the instant petition was filed along with a request for an extension of time within the fourth month.

Petitioner has shown that inventors Meng Wang and Jian Wang were not able to be located after a diligent effort by the representatives of the 37 CFR 1.47 applicant. The above-identified application and papers have been reviewed and found in compliance with 37 CFR 1.47(a). This application is hereby accorded Rule 1.47(a) status.

As provided in Rule 1.47(c), this Office will forward notice of this application's filing to the non-signing inventor at the addresses given in the petition. Notice of the filing of this application will also be published in the Official Gazette.

This application will be forwarded to the Office of Initial Patent Examination for further processing.

Telephone inquiries should be directed to the undersigned at (571) 272-3222.

Kenya A. McLaughlin
Petitions Attorney
Office of Petitions

IN THE UNITED STATES OF AMERICA
PATENT AND TRADEMARK OFFICE

In re application of: MENG WANG
JIAN WANG
YING LUO
IGNATIUS CHENG

Title: CONTROL MECHANISMS FOR ENHANCED FEATURES FOR STREAMING VIDEO ON DEMAND SYSTEMS

Serial No.: 10/727,857

Filing Date: December 4, 2003

Atty Docket No.: 17557-0

MAIL STOP PETITIONS
COMMISSIONER FOR PATENTS
P. O. BOX 1450
ALEXANDRIA, VA 22313-1450

PETITION SETTING FORTH FACTS IN SUPPORT OF FILING ON BEHALF OF NON-SIGNING INVENTORS (MENG WANG AND JIAN WANG) UNDER 37 C.F.R. 1.47(a)

This statement is made as to the exact facts that are relied upon to establish the diligent effort made to secure the execution of the declaration by the non-signing inventors for the above-identified patent application.

(check next item, if applicable)

[ ] Because signing on behalf of the non-signing inventor is by a person or entity showing a sufficient proprietary interest, this statement also recites facts as to why this action was necessary to preserve rights of the parties or to prevent irreparable damage.

This statement is being made by the available person(s) having first hand knowledge of the facts recited herein.

08/31/2004 MAHMED1 00000073 10727857
03 FC:1460 130.00 OP

IDENTIFICATION OF PERSON(S) MAKING THIS STATEMENT OF FACTS

Name of first affiant: PHIL NERLAND

Address of first affiant: Digital Accelerator Corporation
1255 West Pender Street
Vancouver, British Columbia V6E 2V1
Canada

Name of second affiant: PEGGIE JONES

Address of second affiant: Digital Accelerator Corporation
1255 West Pender Street
Vancouver, British Columbia V6E 2V1
Canada

LAST KNOWN ADDRESS(ES) OF THE NON-SIGNING INVENTOR(S)

(A) Meng Wang, the first named inventor

Country of Citizenship: Canada

Last known address: #306-7288 No. 3 Road
Richmond, British Columbia V6Y 3Y1
Canada

(B) Jian Wang, the second named inventor

Country of Citizenship: China

Last known address: 209-5900 Olive Avenue
Burnaby, British Columbia V6H 2P6
Canada

DETAILS OF EFFORTS TO REACH NON-SIGNING INVENTOR(S)

BEFORE ME, the undersigned Notary, duly qualified and commissioned in and for the Province of British Columbia, personally came and appeared, PHIL NERLAND and PEGGIE JONES, who, after being duly sworn, did depose and state as follows:

1.

I, Phil Nerland, am the President of Digital Accelerator Corporation ("DAC"), a company located in Vancouver, British Columbia.

2.

I, Peggie Jones, am an administrator for DAC and have been employed with DAC from 1997 to the present.

3.

We, Phil Nerland and Peggie Jones, have first hand knowledge relating to the employment and inability to locate Meng Wang and Jian Wang, the particulars of which are set forth in more detail below.

4.

Meng Wang and Jian Wang, two of the four inventors for the above referenced invention entitled CONTROL MECHANISMS FOR ENHANCED FEATURES FOR STREAMING VIDEO ON DEMAND SYSTEMS, U.S. Patent Application Serial No. 10/727,857, are former employees of DAC.

5.

During the period of conception and reduction to practice of the above referenced invention, Meng Wang and Jian Wang were bound by employment agreements with DAC. Article 11 of the employment agreements required Meng Wang and Jian Wang to assign to DAC any and all inventions, patents, and other intellectual property rights that were conceived or developed during the period of employment with DAC. *See* copies of employment agreements for Meng Wang and Jian Wang attached hereto as **Exhibits A** and **B**.

DETAILS OF EFFORTS TO REACH MENG WANG

6.

Meng Wang remained employed with DAC until he resigned in October of 2001. Meng Wang's business activities during and after his employment with DAC are now the subject of a litigation commenced in the Supreme Court of British Columbia, entitled *Digital Accelerator Corporation v. Meng Wang*, Suit No. S034859 (hereinafter "the Lawsuit").

7.

DAC, acting through its attorney Glenn J. Niemela, has attempted to serve Meng Wang with a copy of the Lawsuit by hiring four private process servers. Details of the efforts of these process servers are summarized in the Affidavit of Glenn J. Niemela, which is attached hereto as **Exhibit C**. Additional details of the efforts to reach Meng Wang are summarized below.

8.

On or about September 9, 2003, Concord Title Search, Process Serving ("CTS"), which is located in Vancouver, BC, was retained to effect service on Meng Wang. As evidenced by the Affidavit of Darlene Thornhill attached hereto as **Exhibit D**, a CTS representative unsuccessfully attempted to contact Meng Wang at 310-688 Fairchild, Vancouver, BC on September 10, 2003. The phone number used to contact Meng Wang was (604) 738-6383, which was listed as being registered to "M. Wang." Upon calling the aforementioned phone number, an adult male informed CTS personnel that Meng Wang was not at home.

9.

On or about September 24, 2003, Damon Wong Process Serving ("DWPS"), which is located in Vancouver, BC, was retained to effect service on Meng Wang. As evidenced by the Affidavit of Michael Yamamoto attached hereto as **Exhibit E**, a DWPS representative named Michael Yamamoto unsuccessfully attempted to locate Meng Wang at 310-688 Fairchild, Vancouver, BC on three consecutive days from September 24, 2003 through September 26, 2003. The DWPS representative stated that a caretaker on the premises claimed that the Defendant had moved out of the 310-688 Fairchild apartment around June or July of 2003.

10.

On or about October 13, 2003, Action Process Serving, Ltd. ("APS"), which is located in Vancouver, BC, was retained to effect service on Meng Wang. As evidenced by the Affidavit of Lesley Ord attached hereto as **Exhibit F**, an APS representative named Victoria Demosky unsuccessfully attempted to call Meng Wang at 310-688 Fairchild, Vancouver, BC, at phone number (604) 269-6699. The tenants who responded claimed to have never heard of Meng Wang. Ms. Demosky also learned through confidential sources that Meng Wang was not receiving services from any utility companies, water companies, or cable companies and did not have any outstanding accounts at that time. Ms. Demosky

further learned that Meng Wang did not have any outstanding accounts being collected by any collection agencies.

11.

On or about November 4, 2003, West Coast Title Search, Process Serving ("WCTS"), which is located in Vancouver, BC, was retained to effect service on Meng Wang. As evidenced by the Affidavit of Eduardo Lopez attached hereto as **Exhibit G**, a WCTS representative named Eduardo Lopez attempted to call Meng Wang at 306-7288 No. 3 Road, Richmond, BC at telephone number (604) 278-9818, but spoke instead with a female who identified herself as the wife of Meng Wang. The purported wife of Meng Wang indicated that she was separated from Meng Wang and refused to provide any information as to Meng Wang's whereabouts. On November 20, 2003, a WCTS employee named Bradley R. Fraser spoke with Yi Wu, the purported wife of Meng Wang, at 306-7288 No. 3 Road in Richmond, BC. Ms: Wu stated that Meng Wang had moved out in June of 2003 and that she did not know Meng Wang's current address, telephone number, or email address. Mr. Fraser again spoke personally with Yi Wu on November 23, 2003, who still did not know the whereabouts of Meng Wang. On November 24, 2003, Mr. Fraser visited apartment A310 at 688 Fairchild Road and spoke with an Asian adult female, who claimed that the residence was occupied by the Liao family and that they did not know Meng Wang.

12.

On or about February 6, 2004, Peggie Jones sent a letter via registered mail (#RT 811 773 515 CA) to Mr. Meng Wang at his last known address of #306-7288 No. 3 Road, Richmond, BC V6Y 3Y1. The letter enclosed copies of Patent Application Serial No. 10/727,857 and a Combined Declaration and Power of Attorney for signature by Meng Wang. The letter and the enclosures were returned as undeliverable on February 9, 2004. Copies of the February 6, 2004 letter, the enclosures, and the return receipt information are attached as **Exhibit H**.

13.

In light of the previous unsuccessful attempts to reach Meng Wang in connection with the Lawsuit, we, Phil Nerland and Peggie Jones, having first hand knowledge of the foregoing events, verily believe that all diligent efforts to locate the inventor Meng Wang have been unsuccessful and that all possible options for contacting Meng Wang have been exhausted.

DETAILS OF EFFORTS TO REACH JIAN WANG

14.

Jian Wang terminated his employment with DAC on or about February 7, 2001.

15.

On December 12, 2003, all DAC employees working in the Science Department were interrogated as to the whereabouts of Jian Wang. None of the employees was aware of Jian Wang's current address or phone number.

16.

On December 17, 2003, Peggie Jones sent an email to helloyou200us@yahoo.com, which is the email address that is contained in Jian Wang's DAC employee file. A "failure delivery" notice was received from the Yahoo Mailer Daemon.

17.

On December 18, 2003, Peggie Jones sent an email to jwangc@sc.sfu.ca, which is the email address used for initial correspondence with Jian Wang in December 1998. An "Undelivered Mail Returned to Sender" notice was received on the same date.

18.

On December 19, 2003, Peggie Jones attempted to contact Jian Wang at his last known phone number ((604) 438-6568), but the phone company indicated that this number was no longer in service. A search of the phone listings for Jian Wang revealed a list of Wangs that is too long to search.

19.

On January 9, 2004, Peggie Jones sent a memorandum to Susan Chao of MBM & Co., attorneys for DAC. The memorandum sets forth the details of DAC's efforts to reach Jian Wang. A copy of this memorandum and the attachments thereto are included as **Exhibit I**.

20.

On February 6, 2004, Peggie Jones sent a letter via registered mail (#RT 811 773 538 CA) to Jian Wang at his last known address of Apt. 209, 5900 Olive Avenue, Burnaby, BC V5H 2P6, Canada. The letter enclosed copies of Patent Application Serial No. 10/727,857 and a Combined Declaration and Power of Attorney for signature by Jian Wang. The letter and the enclosures were returned as undeliverable on February 9, 2004. Copies of the February 6, 2004 letter, the enclosures, and the return receipt information are attached as **Exhibit J**.

21.

We, Phil Nerland and Peggie Jones, having first hand knowledge of the foregoing events, verily believe that all diligent efforts to locate the inventor Jian Wang have been unsuccessful and that all possible options for contacting Jian Wang have been exhausted.

SIGNATURE(S)

Phil Nerland

Dated: 31 March

Country of Citizenship: Canada

Address: Digital Accelerator Corporation
1255 West Pender Street
Vancouver, British Columbia V6E 2V1
Canada

Sworn before me in the City of Vancouver, British Columbia, this 31 day of March, 2004.

Commissioner for Taking Affidavits
For British Columbia

RICHARD J.S. RAINEY
Barrister & Solicitor
#718 - 744 WEST HASTINGS STREET
VANCOUVER, BC V6C 1A5
Telephone: (604) 682-4600

(Signatures continued on next page)

Peggie Jones

Dated: 3 March 04

Country of Citizenship: Canada

Address: Digital Accelerator Corporation
1255 West Pender Street
Vancouver, British Columbia V6E 2V1
Canada

Sworn before me in the City of Vancouver, British Columbia, this 3 day of March, 2004.

Commissioner for Taking Affidavits
For British Columbia

RICHARD J.S. RAINEY
Barrister & Solicitor
#718 - 744 WEST HASTINGS STREET
VANCOUVER, BC V6C 1A5
Telephone: (604) 682-4600

(Signatures end with this page)

Agreement

This Agreement made as of the 1st day of March 1999

BETWEEN:

DIGITAL ACCELERATOR CORPORATION, a corporation existing under the laws of the Province of British Columbia

(hereinafter called the "Corporation")

AND:

Meng Wang of 3027 Laurel Street, Vancouver, B.C. V5Z 3T6

(hereinafter called the "Employee")

THIS AGREEMENT WITNESSES that in consideration of the mutual covenants and agreements herein contained and for other good and valuable consideration, it is hereby agreed by and among the parties hereto as follows:

Article 1 DEFINITIONS

1.1 In the agreement, unless there is something in the subject matter or context inconsistent therewith,

a) "affiliates" shall have the meaning ascribed in the Company Act (British Columbia);

b) "Contract Year" means the period from and including first day of the first month in any calendar year that employment commences to and including the last day of the last month in the immediately following calendar year.

Article 2 EMPLOYMENT OF EMPLOYEE

2.1 The Corporation shall employ the Employee, and the Employee shall serve the Corporation in the capacity as the Chief Scientist of the Corporation.

Article 3 PERIOD OF SERVICE

3.1 The services of the Employee contemplated in this agreement shall commence on the 1st day of March, 1999 and shall continue for a period of service of three contract years, with a renewal of an additional three years, from and including such date, unless sooner terminated pursuant to the provisions of this agreement.

Article 4 SERVICES AND DUTIES OF THE EMPLOYEE

4.1 The Employee shall provide such services and perform such duties for the Corporation and its affiliates as are consistent with her position as Chief Scientist for the Corporation and as may from time to time be assigned to the Employee by the Board of Directors of the Corporation.

4.2 The Employee shall well and faithfully serve the Corporation and its affiliates during the period of service provided for in Article 2 hereof and shall use her reasonable best efforts to promote the interest of the Corporation and its affiliates and during the term hereof shall devote her full time and energies to the Corporation and its affiliates and will ensure that he is not at any time engaged in conduct which would constitute a conflict with the interests of the Corporation and its affiliates. The Employee will, in the performance of her duties, promote the interest, business and reputation of the Corporation and its affiliates and shall perform all such duties as are essential or conducive to the efficient management thereof in accordance with the rules and policies of the Corporation from time to time.

4.3 The Employee acknowledges that the effective performance of her duties requires the highest level of integrity in the Employee's relationship with other employees or employees of the Corporation and its affiliates and with all persons dealt with in the course of her employment. The Employee shall diligently, faithfully and honestly serve the Corporation and its affiliates during the continuance of her contract hereunder and shall use her reasonable best efforts to promote the interests of the Corporation and its affiliates.

Article 5 COMPENSATION

5.1 The Corporation shall pay to the Employee a sum of $102,000 in the currency of Canada (Cdn$) in respect of her services for each and every Contract Year, and such salary shall be payable in equal semi-monthly installments in arrears or in such other periodic installments in arrears as may from time to time be mutually agreed upon by the Employee and the Corporation. The salary of the employee shall be reviewed at April 1 of each contract year. The first review will take place 13 months after the signing of this contract.

5.2 The employee shall share in a Director and Employee Stock Option Plan. The first installment under this plan shall entitle the employee to 50,000 shares @ $1.00 exercisable within five years from March 1, 1999. Under the Stock Option Plan if the employee leaves the employ of the Employer the options must be exercised within 30 days from the date of termination.

Article 6 EXPENSES AND BENEFITS

6.1 The Corporation shall reimburse the Employee for, or pay, all reasonable travelling and other expenses properly incurred by the Employee in connection with the affairs of the Corporation.

6.2 The Employee shall furnish the Corporation with vouchers, receipts, invoices or other reasonable details in respect of any expenses for which the Employee desires to be reimbursed by the Corporation.

6.3 The Employee shall be entitled to participate in and to receive all rights and benefits under life insurance, disability, medical, dental, health and accident plans maintained by the Corporation for its employees generally.

Article 7 VACATION

7.1 The Employee shall be entitled to four weeks paid vacation during each Contract Year that the Employee is employed by the Corporation pursuant to this agreement.

Article 8 TERMINATION

8.1 The Corporation may at any time terminate the contract of the Employee for Cause (as such term is hereinafter defined), by giving written notice to the Employee of the termination of her contract, and her contract shall be terminated upon the later of

(a) the date on which the Employee receives such notice of termination; and

(b) the date stipulated in the notice of termination as the date on which the contract of the Employee is to terminate.

For all purposes under this agreement, "Cause" shall mean (i) failure by the Employee to substantially perform her duties hereunder, other than a failure resulting from the Employee's complete or partial incapacity due to physical or mental illness or impairment, (ii) an act by the Employee which constitutes gross misconduct and which is injurious to the financial interest of the Corporation or its affiliates, (iii) a material breach by the Employee of a material provision of this agreement, or (iv) a material violation by the Employee of a United States of Canadian federal, state or provincial law or regulation applicable to the business of the Corporation or its affiliates which causes material harm to the Corporation and which was not authorized or approved by the Board of Directors of the Corporation. No compensation or benefits will be paid or provided to the Employee under this agreement on account of a termination for Cause, or for periods following the date when such a termination of the contract is effective.

8.2 The Corporation may, at any time without Cause, terminate the Employee's contract upon two weeks notice provided that the Corporation may, at its option, pay in lieu of notice to the Employee an amount equal to the salary that the Employee would have earned during the applicable notice period and this amount, once paid or set off, shall be a full and final settlement of all obligations of the Corporation in respect of the contract of the Employee and the Employee shall not be entitled to any other compensation, termination allowance, damages or other amount as a result of the termination of her contract with the Corporation for any reason whatsoever, whether or not such termination is without Cause or without reasonable or any notice. For greater certainty the Corporation shall not have the right to set off of any amounts owing or claimed to be owing by the Employee to the Corporation at the time notice and payment are provided to the Employee by the Corporation.

8.3 The Corporation may terminate the Employee's contract for Disability by giving the Employee 30 days advance notice in writing. For all purposes under this agreement, "Disability" shall mean that the Employee, at the time notice is given, has been unable to substantially perform her duties under this agreement for a period of not less than six consecutive months as the result of her incapacity due to physical or mental illness. In the event that the Employee resumes the performance of substantially all of her duties hereunder before the termination of her contract under this section 8.3 becomes effective, the notice of termination shall automatically be deemed to have been revoked. No compensation or benefits will be paid or provided to the Employee under this agreement on account of termination for Disability, or for periods following the date when such a termination of employment is effective.

8.4 The Employee's contract shall terminate in the event of her death. The Corporation shall have no obligation to pay or provide any compensation or benefits under this agreement on account of the Employee's death, or for periods following the Employee's death.

Article 9 NON-COMPETITION AND NON-SOLICITATION

9.1 Where used in this Article 9, Article 10 and Article 11,

"Customer" means any person which has requested the Corporation, orally or in writing, to provide products or services for it, and shall include those persons, firms, corporations or other entities.

9.4 The Employee covenants and agrees with the Corporation that at all times until the Release Date he will not,

(a) for the benefit of a Competitive Business, directly or indirectly, perform services for, solicit, or assist other persons to solicit (i) any Customer or any Customer Account of any Customer, or (ii) any Potential Customer or any Potential Customer Account of any Potential Customer which became a Potential Customer in the 12 months prior thereto; or

(b) recruit, solicit, hire or recommend the hiring of any person who was employed by the Corporation or its affiliates at any time during the 12 month period prior to the last day of employment with the Corporation (provided, however, that such restriction shall not apply to any employee of the Corporation or its affiliates who was terminated by the Corporation or its affiliates).

9.5 Nothing contained in this Article shall be deemed to affect or impair the otherwise lawful rights of the Corporation to enforce its lawful remedies against the Employee either during the period of service hereunder or at any time thereafter to prevent the Employee from approaching or soliciting any Customer or employee of the Corporation or its affiliates with a view towards inducing such Customer or employee to breach a contract between the Corporation or its affiliates and such Customer or employee and to recover any damages resulting therefrom.

Article 10 NON-DISCLOSURE

10.1 The Employee acknowledges that either as a result of her prior association with the Corporation or in the course of carrying out, performing and fulfilling her duties hereunder, he is presently in possession of and will have access to and will be entrusted with information and trade secrets and know-how concerning the business of the Corporation or its affiliates and the present and contemplated services and techniques of the Corporation of its affiliates, the disclosure of any of which information or trade secrets or know-how to competitors of the Corporation or its affiliates or to others or to the public will be highly detrimental to the best interest of the Corporation or its affiliates. The Employee further acknowledges and agrees that the right to maintain the secrecy of such information and trade secrets and know-how constitutes a proprietary right which the Corporation or its affiliates are entitled to protect. Accordingly, the Employee further covenants and agrees that at all times during the term hereof and at all times thereafter he will hold all of the foregoing information, trade secrets and know-how in secrecy as trustee or custodian for the Corporation and its affiliates for the exclusive benefit and use and will faithfully do all reasonable acts and things to assist the Corporation and its affiliates in holding in secrecy the foregoing.

10.2 The Employee shall not at any time without the prior written consent and approval of the Corporation, either during the term hereof or thereafter, disclose or divulge, directly or indirectly, to any person, firm or corporation any of the information and trade secrets and know-how described or contemplated in section 10.1 and without like consent, he will not at any time, either during the term hereof or thereafter, practice or use other than for the benefit of the Corporation or its affiliates any such information and trade secrets and know-how not at the time a matter of public knowledge and available for use by the public. Without limiting the generality of the foregoing, except as permitted by the Corporation, the Employee shall not at any time during or after the term of the contract with the Corporation, divulge, disclose or communicate, directly or indirectly, to any person, or use for her own benefit or for the benefit of anyone other than the Corporation or its affiliates, any trade secrets of the Corporation or its affiliates, any Customer or Potential Customer identities and contacts; Customer or Potential Customer lists; Customer or Potential Customer financial, business or personal information; Customer or the Corporation or its affiliates Customer or Potential Customer goals or objectives,

the Corporation's or any affiliate's recommendations or proposals; other information relating to Customer or Potential Customer accounts, feedback or directions; and financial and business information relating to the Corporation or its affiliates, its businesses, its Customers or its Potential Customers.

10.3 The Employee further covenants and agrees with the Corporation that all instructions, drawings, notes, memoranda, inventions, patents and other industrial property relating to the business of the Corporation or its affiliates made or conceived by him during the term hereof or which may come into her possession during the term hereof and which relate in any way to or embody any of the information, trade secrets or know-how, referred to in section 10.1 or any research done for the Corporation shall be the exclusive property of the Corporation.

Article 11 TITLE TO INTELLECTUAL PROPERTY

11.1 The Employee covenants and agrees with the Corporation that he will fully and freely (and without expense to the Corporation) communicate to the Corporation, and the Employee hereby assigns to the Corporation all discoveries, concepts, inventions or improvements, whether patentable or not, made, discovered, conceived, invented or improved by the Employee as well as any ideas, plans, concepts, copyrightable materials, copyrights, trademarks, trade dress and any other intellectual property conceived or created by the Employee (hereinafter collectively call the "IP Rights") during the period commencing on the date hereof and ending on the date the Employee ceases for any reason to be a employee of the Corporation and in any way relating to any process, formula, plan, skill, method of advertising, marketing, research, equipment, device, or method of doing business, developed or being developed, made, used, sold or installed by or made known to the Employee during the period of her employment hereunder or resulting from or suggested by any work which the Employee may do for the Corporation or its affiliates at the request of the Corporation or its affiliates and relating to any business carried on or proposed to be carried on by the Corporation or its affiliates, and the Employee agrees that he will at the expense of the Corporation at all times (both during the period of her contact hereunder and at all times thereafter) assist the Corporation, its affiliates or their respective assignees or their nominees in every way to protect the rights of the Corporation and its affiliates under this section 10 and to vest in the Corporation or its assignees the entire right, title and interest, including, without limitation, the copyright, in and to any and all of the IP Rights and that he will not disclose to any person, firm or company or use any such IP rights and that he will not disclose to any person, firm or company or use any such IP Rights for their own purposes or for any purposes other than those of the Corporation and its affiliates. The Employee hereby represents and warrants to the Corporation that he does not currently have any OP Rights that have not been assigned to the Corporation or its affiliates and, to the extent that such representation and warranty is incorrect in any way, the Employee hereby sells, assigns and transfers to the Corporation any and all IP Rights which the Employee currently has.

Article 12 NOTICES

12.1 Any notice or other document required or permitted to be given or sent or delivered hereunder to any party hereto shall be in writing and shall be sufficiently given or sent or delivered if it is

(a) delivered personally to such party or, if such party is a corporation, to an officer or director thereof, or

(b) sent to the party entitled to receive it by registered mail, postage prepaid and addressed to such party as follows, namely,

(i) In the case of the Corporation,

Suite 840 - 650 West Georgia Street

Vancouver, B.C. V6B 4N9

Attention: Phil Nerland, President
Telecopier: (604) 688-9798

(ii) in the case of the Employee,

3027 Laurel Street
Vancouver, B.C. V5Z 3T6

or to such other address as the party entitled to or receiving such notice or other document shall, by a notice given in accordance with this section, have communicated to the party giving or sending or delivering such notice or other document.

Any notice or other document given or sent or delivered as aforesaid that

(c) if delivered as aforesaid, be deemed to have been given, sent, delivered and received on the date of delivery; and

(d) if sent by mail as aforesaid, be deemed to have been given, sent, delivered and received on the first day following the date of mailing.

Article 13 GOVERNING LAW

13.1 The provisions of this agreement shall be governed by and interpreted in accordance with the laws of British Columbia and each of the parties hereto hereby irrevocably attorns to the non-exclusive jurisdiction of the courts of such province.

Article 14 EXTENDED APPLICATION

14.1 The provisions of this agreement shall enure to the benefit of and be binding upon,

(a) the Employee and her heirs, executors, administrators and personal representatives, and

(b) the Corporation and its successors and assigns.

14.2 The rights the Corporation hereunder may be assigned to any person, firm or corporation that acquires or is about to acquire all or substantially all of the property of the Corporation, provided that (in the case of an assignment of the rights of the Corporation such person, firm or corporation undertakes in writing to the Employee to assume the obligations of the Corporation hereunder.

Article 15 SURVIVAL

15.1 For greater certainty it is acknowledged and agreed by the parties hereto that the provisions of Articles 9, 10 and 11 hereof shall survive the expiration of the period of service provided for in Article 3 of this agreement and any termination of this agreement and shall continue thereafter in full force and effect.

Article 16 REASONABLENESS OF PROVISIONS

16.1 The Employee hereby agrees that all covenants, provisions and restrictions contained herein are necessary and fundamental to the protection of the business of the

Corporation and to the protection of the value of the Corporation's business, and that a breach by the Employee of any covenant and provision in Articles 9,10 or 11 hereof would result in damages to the Corporation that cold not adequately be compensated by monetary award. Accordingly, it is expressly agreed by the Employee that in addition to all other remedies available to it including, without limitation, any right for damages or any right to terminate this agreement, the Corporation shall be entitled to the immediate remedy of a restraining order, interim injunction, injunction or other form of injunctive or other relief as may be decreed or issued by any court of competent jurisdiction to restrain or enjoin the Employee from breaching any such covenant or provision including, without limitation, the prevention of the Employee from carrying on the competing activity.

16.2 The Employee hereby agrees that all covenants, provisions and restrictions are reasonable and valid and all defences to the strict enforcement thereof by the Corporation are hereby waived by the Employee.

Article 17 RIGHT TO ADVICE OF LEGAL COUNSEL

17.1 The Employee acknowledges that he has consulted with legal counsel and is fully aware of her rights and obligations under this agreement.

Article 18 WAIVER

18.1 No waiver by any party of any default or breach of any term, condition or covenant of this agreement shall be deemed to be a waiver of any subsequent default or breach of the same or any other term, condition or covenant contained herein, nor shall it be effective unless in writing. The failure of any party hereto to enforce at any time or for any period of time any provision hereof in accordance with its terms shall not be construed to be a waiver of such provision or of the right of such party thereafter to enforce any provision hereof. This agreement may only be waived or amended by the Corporation with the prior approval of the Board of Directors of the Corporation.

Article 19 ENFORCEABILITY

19.1 If any covenant or provision in this agreement is determined to be void or unenforceable in whole or in part, such covenant or provision shall be severable from all other covenants and provisions hereof and shall not affect or impair the validity of any other covenant or provision hereof.

IN WITNESS WHEREOF this agreement has been executed by the parties hereto.

SIGNED, SEALED AND)
DELIVERED in the presence)
of:)
)

Meng Wang

DIGITAL ACCELERATOR CORPORATION

Per: Phil Nerland (and President)
Phil Nerland
President

Agreement

This Agreement made as of the 1st day of April 2000

BETWEEN:

DIGITAL ACCELERATOR CORPORATION, a corporation existing under the laws of the Province of British Columbia

(hereinafter called the "Corporation")

AND:

Jian Wang of 104 – 7495 Sandborne Avenue, Burnaby, B.C. V3N 4V4

(hereinafter called the "Employee")

THIS AGREEMENT WITNESSES that in consideration of the mutual covenants and agreements herein contained and for other good and valuable consideration, it is hereby agreed by and among the parties hereto as follows:

Article 1 **DEFINITIONS**

1.1 In this agreement, unless there is something in the subject matter or context inconsistent therewith,

a) "affiliates" shall have the meaning ascribed in the Company Act (British Columbia);

b) "Contract Year" means the period from and including first day of the first month in any calendar year that employment commences to and including the last day of the last month in the immediately following calender year.

Article 2 **EMPLOYMENT OF EMPLOYEE**

2.1 The Corporation shall employ the Employee, and the Employee shall serve the Corporation in the capacity as Senior System Engineer and Team Leader of the Corporation reporting to Meng Wang, Chief Scientist or his designate.

Article 3 **PERIOD OF SERVICE**

3.1 The services of the Employee contemplated in this agreement shall commence on the 1st day of April 2000 and shall continue for a period of service of three (3) contract years with a renewal of an additional year, from and including such date, unless sooner terminated pursuant to the provisions of this agreement.

Article 4 **SERVICES AND DUTIES OF THE EMPLOYEE**

4.1 The Employee shall provide such services and perform such duties for the Corporation and its affiliates as are consistent with his position as Senior System Engineer and team Leader for the Corporation and as may from time to time be assigned to the Employee by the Board of Directors of the Corporation.

4.2 The Employee shall well and faithfully serve the Corporation and its affiliates during the period of service provided for in Article 2 hereof and shall use his reasonable best efforts to promote the interest of the Corporation and its affiliates and during the term hereof shall devote his full time and energies to the Corporation and its affiliates and will ensure that he is not at any time engaged in conduct which would constitute a conflict with the interests of the Corporation and its affiliates. The Employee will, in the performance of his duties, promote the interest, business and reputation of the Corporation and its affiliates and shall perform all such duties as are essential or conducive to the efficient management thereof in accordance with the rules and policies of the Corporation from time to time.

4.3 The Employee acknowledges that the effective performance of his duties requires the highest level of integrity in the Employee's relationship with other employees or employees of the Corporation and its affiliates and with all persons dealt with in the course of his employment. The Employee shall diligently, faithfully and honestly serve the Corporation and its affiliates during the continuance of his contract hereunder and shall use his reasonable best efforts to promote the interests of the Corporation and its affiliates.

Article 5 COMPENSATION

5.1 The Corporation shall pay to the Employee a sum of $78,000.00 in the currency of Canada (Cdn$) in respect of his services for each and every Contract Year, and such salary shall be payable in equal semi-monthly installments in arrears or in such other periodic installments in arrears as may from time to time be mutually agreed upon by the Employee and the Corporation.

5.2 The employee shall share in a Director and Employee Stock Option Plan. The first installment under this plan shall entitle the employee to 50,000 shares @ $1.00 exercisable within five years from April 1, 2000. Under the Stock Option Plan if the employee leaves the employ of the Employer the options must be exercised within 30 days from the date of termination.

Article 6 EXPENSES AND BENEFITS

6.1 The Corporation shall reimburse the Employee for, or pay, all reasonable travelling and other expenses properly incurred by the Employee in connection with the affairs of the Corporation.

6.2 The Employee shall furnish the Corporation with vouchers, receipts, invoices or other reasonable details in respect of any expenses for which the Employee desires to be reimbursed by the Corporation.

6.3 The Employee shall be entitled to participate in and to receive all rights and benefits under life insurance, disability, medical, dental, health and accident plans maintained by the Corporation for its employees generally.

Article 7 VACATION

7.1 The Employee shall be entitled to three weeks paid vacation during each Contract Year that the Employee is employed by the Corporation pursuant to this agreement.

Article 8 TERMINATION

8.1 The Corporation may at any time terminate the contract of the Employee for Cause (as such term is hereinafter defined), by giving written notice to the Employee of the termination of his contract, and his contract shall be terminated upon the later of

(a) the date on which the Employee receives such notice of termination; and

(b) the date stipulated in the notice of termination as the date on which the contract of the Employee is to terminate.

For all purposes under this agreement, "Cause" shall mean (i) failure by the Employee to substantially perform his duties hereunder, other than a failure resulting from the Employee's complete or partial incapacity due to physical or mental illness or impairment, (ii) an act by the Employee which constitutes gross misconduct and which is injurious to the financial interest of the Corporation or its affiliates, (iii) a material breach by the Employee of a material provision of this agreement, or (iv) a material violation by the Employee of a United States of Canadian federal, state or provincial law or regulation applicable to the business of the Corporation or its affiliates which causes material harm to the Corporation and which was not authorized or approved by the Board of Directors of the Corporation. No compensation or benefits will be paid or provided to the Employee under this agreement on account of a termination for Cause, or for periods following the date when such a termination of the contract is effective.

8.2 The Corporation may, at any time without Cause, terminate the Employee's contract upon two weeks notice provided that the Corporation may, at its option, pay in lieu of notice to the Employee an amount equal to the salary that the Employee would have earned during the applicable notice period and this amount, once paid or set off, shall be a full and final settlement of all obligations of the Corporation in respect of the contract of the Employee and the Employee shall not be entitled to any other compensation, termination allowance, damages or other amount as a result of the termination of his contract with the Corporation for any reason whatsoever, whether or not such termination is without Cause or without reasonable or any notice. For greater certainty the Corporation shall not have the right to set off of any amounts owing or claimed to be owing by the Employee to the Corporation at the time notice and payment are provided to the Employee by the Corporation.

8.3 The Corporation may terminate the Employee's contract for Disability by giving the Employee 30 days advance notice in writing. For all purposes under this agreement, "Disability" shall mean that the Employee, at the time notice is given, has been unable to substantially perform his duties under this agreement for a period of not less than six consecutive months as the result of his incapacity due to physical or mental illness. In the event that the Employee resumes the performance of substantially all of his duties hereunder before the termination of his contract under this section 8.3 becomes effective, the notice of termination shall automatically be deemed to have been revoked. No compensation or benefits will be paid or provided to the Employee under this agreement on account of termination for Disability, or for periods following the date when such a termination of employment is effective.

8.4 The Employee's contract shall terminate in the event of his death. The Corporation shall have no obligation to pay or provide any compensation or benefits under this agreement on account of the Employee's death, or for periods following the Employee's death.

Article 9 **NON-COMPETITION AND NON-SOLICITATION**

9.1 Where used in this Article 9, Article 10 and Article 11,

"Customer" means any person which has requested the Corporation, orally or in writing, to provide products or services for it, and shall include those persons, firms, corporations or other entities.

(a) who are served by or with whom the Employee has, in a business capacity, become acquainted while employed or retained by the Corporation or its affiliates,

(b) who are or were customers of the Corporation or its affiliates during the course of the Employee's period of service to the Corporation or its affiliates hereunder and who have continued to be customers of the Corporation until the time of such solicitation, or

(c) who the Employee knew or ought reasonably to have known were customers of the Corporation or its affiliates during the course of his period of service hereunder;

"Potential Customer" means any person with which any employee or employee of the Corporation or its affiliates has held discussions regarding the possibility of rendering services or providing products, or to which an employee or employee has made any written proposal for the performance of services or the provision of products by the Corporation or its affiliates;

"Customer Account" means the specific product, division or other areas of services which the Customer has assigned to the Corporation or its affiliates (provided that if the Corporation or its affiliates represents the Customer generally, then "Customer Account" means all areas of services and products and other services and products provided by the Corporation or its affiliates to such Customer);

"Potential Customer Account" means the specific product, division or other area of products or services which has been the subject matter of discussions between a Potential Customer and the Corporation or its affiliates or the subject matter of an oral or written proposal by the Corporation or its affiliates; and

"Competitive Business" means any other business which provides services or products of any type or character which the Corporation its affiliates typically provides from time to time.

9.2 The Employee covenants and agrees with the Corporation that he will not, within the Territory (as hereinafter defined) without the prior written consent of the Corporation at any time prior to 24 months after the later of:

(a) the date on which the Employee ceases to be a employee of the Corporation; and

(b) March 31, 2005;

(the later date being herein referred to as the "Release Date"), either individually or in partnership or in conjunction with any person or persons, firm, association, syndicate, company or corporation as principal, agent, shareholder, employee or in any other manner whatsoever carry on or be engaged in or be concerned with or interested in or advise, lend money to, guarantee the debts or obligations of or permit his name or any part thereof to be used or employed by any person or persons, firm, association, syndicate, company or corporation engaged in or concerned with or interested in any Competitive Business carried on by the Corporation, except as a shareholder of a corporation, holding less than five per cent (5%) of the outstanding shares thereof, if there is a "published market" (within the meaning of the Securities Act (Ontario) in respect of such securities.

9.3 For the purposes hereof, "Territory" means the world.

9.4 The Employee covenants and agrees with the Corporation that at all times until the Release Date he will not,

(a) for the benefit of a Competitive Business, directly or indirectly, perform services for, solicit, or assist other persons to solicit (i) any Customer or any Customer Account of any Customer, or (ii) any Potential Customer or any Potential Customer Account of any Potential Customer which became a Potential Customer in the 12 months prior thereto; or

(b) recruit, solicit, hire or recommend the hiring of any person who was employed by the Corporation or its affiliates at any time during the 12 month period prior to the last day of employment with the Corporation (provided, however, that such restriction shall not apply to any employee of the Corporation or its affiliates who was terminated by the Corporation or its affiliates).

9.5 Nothing contained in this Article shall be deemed to affect or impair the otherwise lawful rights of the Corporation to enforce its lawful remedies against the Employee either during the period of service hereunder or at any time thereafter to prevent the Employee from approaching or soliciting any Customer or employee of the Corporation or its affiliates with a view towards inducing such Customer or employee to breach a contract between the Corporation or its affiliates and such Customer or employee and to recover any damages resulting therefrom.

Article 10 NON-DISCLOSURE

10.1 The Employee acknowledges that either as a result of his prior association with the Corporation or in the course of carrying out, performing and fulfilling his duties hereunder, he is presently in possession of and will have access to and will be entrusted with information and trade secrets and know-how concerning the business of the Corporation or its affiliates and the present and contemplated services and techniques of the Corporation of its affiliates, the disclosure of any of which information or trade secrets or know-how to competitors of the Corporation or its affiliates or to others or to the public will be highly detrimental to the best interest of the Corporation or its affiliates. The Employee further acknowledges and agrees that the right to maintain the secrecy of such information and trade secrets and know-how constitutes a proprietary right which the Corporation or its affiliates are entitled to protect. Accordingly, the Employee further covenants and agrees that at all times during the term hereof and at all times thereafter he will hold all of the foregoing information, trade secrets and know-how in secrecy as trustee or custodian for the Corporation and its affiliates for the exclusive benefit and use and will faithfully do all reasonable acts and things to assist the Corporation and its affiliates in holding in secrecy the foregoing.

10.2 The Employee shall not at any time without the prior written consent and approval of the Corporation, either during the term hereof or thereafter, disclose or divulge, directly or indirectly, to any person, firm or corporation any of the information and trade secrets and know-how described or contemplated in section 10.1 and without like consent, he will not at any time, either during the term hereof or thereafter, practice or use other than for the benefit of the Corporation or its affiliates any such information and trade secrets and know-how not at the time a matter of public knowledge and available for use by the public. Without limiting the generality of the foregoing, except as permitted by the Corporation, the Employee shall not at any time during or after the term of the contract with the Corporation, divulge, disclose or communicate, directly or indirectly, to any person, or use for his own benefit or for the benefit of anyone other than the Corporation or its affiliates, any trade secrets of the Corporation or its affiliates, any Customer or Potential Customer identities and contacts; Customer or Potential Customer lists; Customer or Potential Customer financial, business or personal information; Customer or the Corporation or its affiliates Customer or Potential Customer goals or objectives, the Corporation's or any affiliate's recommendations or proposals; other information relating to Customer or Potential Customer accounts, feedback or directions; and financial and business

information relating to the Corporation or its affiliates, its businesses, its Customers or its Potential Customers.

10.3 The Employee further covenants and agrees with the Corporation that all instructions, drawings, notes, memoranda, inventions, patents and other industrial property relating to the business of the Corporation or its affiliates made or conceived by him during the term hereof or which may come into his possession during the term hereof and which relate in any way to or embody any of the information, trade secrets or know-how, referred to in section 10.1 or any research done for the Corporation shall be the exclusive property of the Corporation.

Article 11 TITLE TO INTELLECTUAL PROPERTY

11.1 The Employee covenants and agrees with the Corporation that he will fully and freely (and without expense to the Corporation) communicate to the Corporation, and the Employee hereby assigns to the Corporation all discoveries, concepts, inventions or improvements, whether patentable or not, made, discovered, conceived, invented or improved by the Employee as well as any ideas, plans, concepts, copyrightable materials, copyrights, trademarks, trade dress and any other intellectual property conceived or created by the Employee (hereinafter collectively call the "IP Rights") during the period commencing on the date hereof and ending on the date the Employee ceases for any reason to be a employee of the Corporation and in any way relating to any process, formula, plan, skill, method of advertising, marketing, research, equipment, device, or method of doing business, developed or being developed, made, used, sold or installed by or made known to the Employee during the period of his employment hereunder or resulting from or suggested by any work which the Employee may do for the Corporation or its affiliates at the request of the Corporation or its affiliates and relating to any business carried on or proposed to be carried on by the Corporation or its affiliates, and the Employee agrees that he will at the expense of the Corporation at all times (both during the period of his contact hereunder and at all times thereafter) assist the Corporation, its affiliates or their respective assignees or their nominees in every way to protect the rights of the Corporation and its affiliates under this section 10 and to vest in the Corporation or its assignees the entire right, title and interest, including, without limitation, the copyright, in and to any and all of the IP Rights and that he will not disclose to any person, firm or company or use any such IP rights and that he will not disclose to any person, firm or company or use any such IP Rights for this own purposes or for any purposes other than those of the Corporation and its affiliates. The Employee hereby represents and warrants to the Corporation that he does not currently have any OP Rights that have not been assigned to the Corporation or its affiliates and, to the extent that such representation and warranty is incorrect in any way, the Employee hereby sells, assigns and transfers to the Corporation any and all IP Rights which the Employee currently has.

Article 12 NOTICES

12.1 Any notice or other document required or permitted to be given or sent or delivered hereunder to any party hereto shall be in writing and shall be sufficiently given or sent or delivered if it is

(a) delivered personally to such party or, if such party is a corporation, to an officer or director thereof, or

(b) sent to the party entitled to receive it by registered mail, postage prepaid and addressed to such party as follows, namely,

(i) In the case of the Corporation,

Suite 904 – 1055 Dunsmuir Street
Vancouver, B.C. V7X 1J1

Attention: Phil Nerland, President
Telecopier: (604) 689-1858

(ii) in the case of the Employee,

104 – 7495 Sandborne Avenue
Burnaby, B.C. V3N 4V4

or to such other address as the party entitled to or receiving such notice or other document shall, by a notice given in accordance with this section, have communicated to the party giving or sending or delivering such notice or other document.

Any notice or other document given or sent or delivered as aforesaid that

(c) if delivered as aforesaid, be deemed to have been given, sent, delivered and received on the date of delivery; and

(d) if sent by mail as aforesaid, be deemed to have been given, sent, delivered and received on the first day following the date of mailing.

Article 13 GOVERNING LAW

13.1 The provisions of this agreement shall be governed by and interpreted in accordance with the laws of British Columbia and each of the parties hereto hereby irrevocably attorns to the non-exclusive jurisdiction of the courts of such province.

Article 14 EXTENDED APPLICATION

14.1 The provisions of this agreement shall enure to the benefit of and be binding upon,

(a) the Employee and his heirs, executors, administrators and personal representatives, and

(b) the Corporation and its successors and assigns.

14.2 The rights the Corporation hereunder may be assigned to any person, firm or corporation that acquires or is about to acquire all or substantially all of the property of the Corporation, provided that (In the case of an assignment of the rights of the Corporation such person, firm or corporation undertakes in writing to the Employee to assume the obligations of the Corporation hereunder.

Article 15 SURVIVAL

15.1 For greater certainty it is acknowledged and agreed by the parties hereto that the provisions of Articles 9, 10 and 11 hereof shall survive the expiration of the period of service provided for in Article 3 of this agreement and any termination of this agreement and shall continue thereafter in full force and effect.

Article 16 REASONABLENESS OF PROVISIONS

16.1 The Employee hereby agrees that all covenants, provisions and restrictions contained herein are necessary and fundamental to the protection of the business of the Corporation and to the protection of the value of the Corporation's business, and that a breach by the Employee of any covenant and provision in Articles 9,10 or 11 hereof would result in damages to the Corporation that cold not adequately be compensated by monetary award.

Accordingly, it is expressly agreed by the Employee that in addition to all other remedies available to it including, without limitation, any right for damages or any right to terminate this agreement, the Corporation shall be entitled to the immediate remedy of a restraining order, interim injunction, injunction or other form of injunctive or other relief as may be decreed or issued by any court of competent jurisdiction to restrain or enjoin the Employee from breaching any such covenant or provision including, without limitation, the prevention of the Employee from carrying on the competing activity.

16.2 The Employee hereby agrees that all covenants, provisions and restrictions are reasonable and valid and all defences to the strict enforcement thereof by the Corporation are hereby waived by the Employee.

Article 17 RIGHT TO ADVICE OF LEGAL COUNSEL

17.1 The Employee acknowledges that he has consulted with legal counsel and is fully aware of his rights and obligations under this agreement.

Article 18 WAIVER

18.1 No waiver by any party of any default or breach of any term, condition or covenant of this agreement shall be deemed to be a waiver of any subsequent default or breach of the same or any other term, condition or covenant contained herein, nor shall it be effective unless in writing. The failure of any party hereto to enforce at any time or for any period of time any provision hereof in accordance with its terms shall not be construed to be a waiver of such provision or of the right of such party thereafter to enforce any provision hereof. This agreement may only be waived or amended by the Corporation with the prior approval of the Board of Directors of the Corporation.

Article 19 ENFORCEABILITY

19.1 If any covenant or provision in this agreement is determined to be void or unenforceable in whole or in part, such covenant or provision shall be severable from all other covenants and provisions hereof and shall not affect or impair the validity of any other covenant or provision hereof.

IN WITNESS WHEREOF this agreement has been executed by the parties hereto.

SIGNED, SEALED AND)
DELIVERED in the presence)
of:)
)

Jian Wang
Jian Wang

DIGITAL ACCELERATOR CORPORATION

Per:
Phil Nerland
President

VANCOUVER
JAN 13 2004
REGISTRY

No. S034859
Vancouver Registry

In the Supreme Court of British Columbia

Between

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

AFFIDAVIT

I, GLENN J. NIEMELA, Barrister and Solicitor, of Suite 1010, 1188 West Georgia Street, PO Box 46, in the City of Vancouver, in the Province of BC, MAKE OATH AND SAY THAT:

8. I am the solicitor for the plaintiff, Digital Accelerator Corporation and as such I have personal knowledge of the matter hereinafter deposed to except where stated to be based upon information and belief and as for such matters I verily believe the same to be true.

9. On or about September 9, 2003, I retained Concord Title Search, Process Serving in Vancouver, BC to effect service on Meng Wang. Allen Jones attempted to effect service on Meng Wang on September 10, 2003. Attached hereto as Exhibit "A" to this my affidavit is the affidavit of attempted service of Darlene Thornhill sworn September 29, 2003. Allen Jones was unable to effect service on Meng Wang.

10. On or about September 24, 2003, I retained Damon Wong Process Serving in Vancouver, BC to effect service on Meng Wang. Michael Yamamoto attempted to effect service on Meng Wang numerous times in September 2003 on the defendant, Meng Wang. Attached hereto as Exhibit "B" to this my affidavit is the affidavit of attempted service of Michael Yamamoto

ALL-STATE LEGAL
EXHIBIT
C

sworn September 10, 2003. Michael Yamamoto was unable to effect service on Meng Wang.

11. On or about October 13, 2003, I retained Action Process Serving Ltd. to locate the whereabout of the defendant, Meng Wang. Victoria Demosky attempted to locate Meng Wang. Attached hereto as Exhibit "C" to this my affidavit is the affidavit of attempted locate of Lesley Ord sworn December 10, 2003. Victoria Demosky was unable to locate Meng Wang.

12. On or about November 4, 2003, I retained West Coast Title Search, Process Serving in Vancouver, BC to effect service on Meng Wang. Bradley R. Fraser attempted to effect service on Meng Wang numerous times in November 2003 on the defendant, Meng Wang. Attached hereto as Exhibit "D" to this my affidavit is the affidavit of attempted service of Eduardo Lopez sworn December 10, 2003. Bradley R. Fraser was unable to effect service on Meng Wang. Eduardo Lopez of West Coast Title Search swears in his affidavit at paragraph 3 that he was informed by a confidential source and verily believes that Meng Wang's current residential address is #306 - 7288 No. 3 Road, Richmond, BC. Mr. Lopez deposes that he phoned the number (604) 278-9818 and spoke with an adult female who identified herself as Meng Wang's wife and informed Mr. Lopez that she was separated from Meng Wang. Mr. Lopez deposes that Meng Wang's wife refused to provide any information regarding Meng Wang's current whereabouts.

13. I swear this affidavit in support of an application pursuant to rule 12(1) and (2) of the Supreme Court Rules to have the plaintiff, Digital Accelerator Corporation, serve the defendant, Meng Wang in respect of this action together with a true copy of this order, substitutionally, with the writ of summons and statement of claim by:

a. mailing a copy of the writ of summons and statement of claim together with a copy of this order by ordinary mail to the residence at #306 - 7288 No. 3 Road, Richmond, BC;

b. leaving a copy of the writ of summons and statement of claim together with a copy of this order with an adult person, at #306 - 7288 No. 3 Road, Richmond, BC;

c. alternatively, posting a copy of the writ of summons and statement of claim together with a copy of this order to the door of the residence at #306 - 7288 No. 3 Road, Richmond, BC.

SWORN BEFORE ME at Vancouver, in the Province of British Columbia, this 9th day of January, 2003.

A Commissioner for taking Affidavits for British Columbia

GLENN J. NIEMELA

This AFFIDAVIT is filed by Glenn J. Niemela, Barrister and Solicitor of Suite 1010, 1188 West Georgia Street, PO Box 46, Vancouver, BC, V6E 4A2, Telephone: (604) 689-7799, Facsimile for Delivery: (604) 689-7798, File No. 932609.

VANCOUVER
JAN 15 2003
REGISTRY

File No: SO34859
Vancouver Registry

In the Supreme Court of British Columbia

Between

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

AFFIDAVIT

I, Darlene Thornhill, Process Server, of #301, 1220 Barclay Street, in the City of Vancouver in the Province of British Columbia. MAKE OATH AND SAY:

1. THAT on September 10, 2003 on the instructions of Glenn J. Niemela, Barrister and Solicitor, we were asked to serve a Writ of Summons and Statement of Claim on the Defendant, Meng Wang at the address of 310-688 Fairchild, Vancouver, BC. I truly believe that Meng Wang is at the address provided by Glenn J. Niemela, Barrister and Solicitor, for the following reasons. Page 1984 of the year 2002 Telus Directory shows M. Weng at 310-688 Fairchild, Vancouver BC with the telephone number of 604-738-6383. Page 708 of the 2003-2004 Super Pages shows M. Wang at 310-688 Fairchild, Vancouver, BC with the telephone number of 604-738-6383. 411.CA both reverse numbers and Search shows up a M. Wang at 310-688 Fairchild, Vancouver, BC with the telephone number of 604-738-6383.

2. THAT on September 10, 2003 I did personally telephone the number of 604-738-6383 and spoke to an adult male. I asked if this was the number for the Wang residence I was told it was. I then asked if Meng Wang was at home and was advised he was not at home.

2. THAT a true copy of Page 1984 of the Telus 2002 Telephone Directory, Page 708 of the 2003 Super Pages and 411.CA searches annexed to this my Affidavit and marked as Exhibit "A" "B" and "C".

SWORN BEFORE ME at the City of Vancouver in the Province of British Columbia this 9 day of September 2003

A commissioner for taking oaths within British Columbia

Darlene Thornhill

GLENN J. NIEMELA
BARRISTER & SOLICITOR
1010 - 1188 WEST GEORGIA STREET
BOX NO. 46
VANCOUVER, B.C. V6E 4A2
TEL. 604-689-7799

ALL-STATE LEGAL
EXHIBIT
D

1984

WANG

Wang L Y 110-8775 Jones Rmd ---- 604 207-9266
Wang L Y 28815-64th Ave Ald ---- 604 856-9321
Dr
Wang Le Yee Ing
1805-5631 Sheldon Hill Dr Bby ---- 604 521-8030
Wang Lee 4362 Dartmouth St ---- 604 875-6239
Wang Lei 4626 Hunter Pky ---- 604 298-8127
Wang Lei-Hsiang 1214 Mckenzie Rmd ---- 604 277-5429
Wang Leung 5451 Nanaimo ---- 604 708-8778
Wang Lei Chi 1360 Evergreen Dr ---- 604 936-0556
Wang Le-Ki 5-7101 St Albans Rmd ---- 604 277-1564
Wang Lea Tsan 44 E Rdn ---- 604 324-0482
Wang Lei Shi-Ouane ---- 604 683-1893
Wang Lei 7239 Ruff ---- 604 324-4113
Wang Lei Ying 1-5600 Ave V Mhn ---- 604 525-1826
Wang Lei 21-4239 W 16th A Vcr ---- 604 266-4260
Wang Lei 207-11320 134 St Sry ---- 604 584-0220
Wang Lei 6276-2159 St Lang ---- 604 888-8097
Wang Lei 1400 College ---- 604 434-1758
Wang Lei Yin Windermere
Dr
Wang Leslie 1103-2772 Fir ---- 604 985-8855
Wang Leslie 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Li 11360 Q Ager Crt Rmd ---- 604 277-1764
Wang Li 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Li 1005-7440 Elmbridge Wy ---- 604 277-2424
Wang Li 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Li Chen 6-1158 Railway Rmd ---- 604 277-1764
Wang Li Chun 5840 Dover Cres Rmd ---- 604 821-7198
Wang Li Fang 4566 Victory Vcr ---- 604 437-1947
Wang Li Hsing 1-1600 Ave Sry ---- 604 584-3997
Wang Li Hsing 1555 Eden Pl Wpt ---- 604 941-0404
Wang Li-Hui 2-4177 Todd ---- 604 277-1764
Wang Li Jen 44-5955 Dunbar Slp ---- 604 224-4479
Dr
Wang Li Li 7191 Lonsdale Rmd ---- 604 985-4477
Wang Li-Ling 3620 Selma Bby ---- 604 521-3647
Wang Li Ling 844 Alouette Dr ---- 604 941-8141
Wang Li Ling 46-5800 Westminster Hwy
Rmd
Wang Li Ming 1607-195 Smyrnia Mnr ---- 604 942-1861
Wang Li Ming 201-2211 Cascade Vcr ---- 604 251-1980
Wang Li Ping 1-3575 Hudson ---- 604 263-0855
Wang Li Ping 14-11371 Twine Rmd ---- 604 277-1764
Wang Li Quan 8 Fell Wpt ---- 604 941-9736
Wang Li Shan 6766 Victory Vcr ---- 604 437-1947
Wang Li Wei 605-4171 Sora Rmd ---- 604 214-3872
Wang Li Wei 2-2441 Dollarton Hwy ---- 604 929-2664
Wang Li Wu 3580 Cobalt Dr Rmd ---- 604 270-2669
Wang Li Xin 315-128 W 17th N Van ---- 604 984-0211
Wang Lian-Shuan ---- 604 737-1811
Wang Liang 301-1438 Pendrell Stp ---- 604 681-6644
Wang Liang 3119 Eagle ---- 604 941-8141
Wang Liang Liang 2715 Hamilton ---- 604 254-0447
Wang Liaoheng 4361 Sunset ---- 604 941-8441
Wang Liaoyu 4818 Se Marine Dr ---- 604 324-4113
Wang Lie 3063 Lee ---- 604 941-9736
Wang Lien-Ju 3766 E Georgia ---- 604 254-0447
Wang Lihui 965 W 24th ---- 604 876-1239
Wang Lihui 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Lihui 2066 Panorama Dvg ---- 604 666-9989
Wang Li Hua 5946 E Pender ---- 604 254-0447
Wang Li Hua 4363 W Avent ---- 604 261-7618
Wang Li Jy 2981 E Hastings ---- 604 254-0447
Wang Li Ling 603-1671 Lonsdowne Rmd ---- 604 533-0583
Wang Liming 105-555 Year Cov ---- 604 984-0211
Wang Lin 54-721 Dore Bby ---- 604 438-3674
Wang Lin 2108-1500 Yorkshire ---- 604 984-0211
Lin Wen-Fen 1855 Evigal Pl
W Van
Wang Linda 230-8500 Ackroyd Rmd ---- 604 207-4277
Wang Lin Jing 1-1400 W 66th ---- 604 261-7618
Wang Ling 3230 Kitchener ---- 604 251-5687
Wang Ling 1126-2080 Pitreavie Gre Sry ---- 604 584-8760
Wang Ling 2217 E 54th ---- 604 324-8780
Wang Lionel 4250 Glenwood Cres Bby ---- 604 437-1112
Wang Li Qiang 4566 Victory Vcr ---- 604 437-1112
Wang Li-Wen 3881-6088 Willingdon
Bby
Wang Liya 5441 Cambie St ---- 604 433-0136
Wang Liya 5441 Cambie St ---- 604 261-7618
Wang Lixin 3511 Cromwell Cri Rmd ---- 604 303-0832
Wang Lizhi 2739 W 24th ---- 604 738-2553
Wang Lizhi 2739 W 24th ---- 604 732-2553
Wang Lo 4988 Maple ---- 604 224-3763
Wang Lo 4988 Maple ---- 604 434-3763
Wang Loien 3680 River Lip Pl Dsn ---- 604 321-0496
Wang Long 2788 W 42nd ---- 604 261-7618
Wang Lubo 2-8680 William Rmd ---- 604 271-8533
Wang Luo & Kay 1256 W 47th ---- 604 266-1256
Wang Luoting 46-8888-151 St Sry ---- 604 584-3996
Wang Lu ---- 604 261-7618
Wang Lu ---- 604 261-7618
Wang Lu ---- 604 261-7618
Wang M Bby ---- 604 324-7976
Wang M 705 Agincourt Cri P Mdw ---- 604 941-8441
Wang M 204-4 Mc Kay Cri Rmd ---- 604 321-5355
Wang M 4878 River Grn Crt ---- 604 270-2669
Wang M 12-4671 Capella Dr Rmd ---- 604 271-4573
Wang M 1400 Ave Ba Slp ---- 604 224-4479
Wang M 303-1509 Comox ---- 604 251-8223
Wang M 2187 Dundas Van ---- 604 254-0447
Wang M 311 Carnarvon Rmd ---- 604 271-1764
Wang M 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang M 4800 Mc Kay Cri Rmd ---- 604 270-2669
Wang M 633 W 42nd ---- 604 324-4578
Wang M 2-4178 Mcmillan Rmd ---- 604 277-1764
Wang M 2024-867 Hamilton ---- 604 688-8498
Wang M 607-3775 Hampton Pl ---- 604 270-9410
Wang M 304-3720 Lansdowne Rmd ---- 604 278-4498
Wang M 7948 Macdonald Dr Bby ---- 604 430-9958
Wang M 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang M 1304-5685 Pinetree Way Cop ---- 604 941-3268
Wang M 1304-5685 Nahrii ---- 604 941-3268
Wang M 705-1780 W 10th ---- 604 266-1138
Wang M 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang M 3452 Wellington
Dr
Wang M H 8186 Mountain ---- 604 263-2196
Wang M Hui 617 Burke Cov ---- 604 939-0152
Wang M J 303-4414 W 10th ---- 604 221-8988
Wang M N 12473-64 Ave Sry ---- 604 596-7928

Wang M S 1306 Quartz P Cov ---- 604 941-8268
Wang M S 1405 Parkway Dr Cov ---- 604 941-8441
Wang M W 8943 Citation Rmd ---- 604 303-3377
Wang Maggie 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Mahi 53-750 Gore ---- 604 294-9048
Wang Mark 1628-Ge Ave 108-16625-10B Ave
Sn ---- 604 583-2811
Wang Mary Claire Yin
156-1688 Pinetree Way Cop ---- 604 941-0265
Wang Mei 3128 E Cambie ---- 604 253-1350
Wang Mei Fang 4133-15 St Sry ---- 604 543-0481
Wang Meifeng 3843 Cambie St Vcr ---- 604 874-1111
Wang Mei Ling 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Mei Ling 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Mei Sya 1878 W 60th ---- 604 266-1256
Wang Mei Yin 400-1500 Comox ---- 604 681-7036
Wang Mei Yan 7771 Rivers Rmd Rmd ---- 604 271-9446
Wang Mei Yan 7771 Rivers Rmd Rmd ---- 604 271-9446
Wang Meizhuh 413-1633 Seymour ---- 604 681-1581
Wang Meiyun 1108 Mclaughlin ---- 604 941-8441
Wang Meng 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Mengjun 3638 Lonsdale N Van ---- 604 985-4477
Wang Mi 1800 W 16th Apt 1 Vcr ---- 604 731-1811
Wang Mi Kyung 109-1000 Ambrose St ---- 604 521-8030
Wang Min 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Ming 1600 Sasamat Vcr ---- 604 224-4479
Wang Ming 4-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Ming Chang 4566 Victory Vcr ---- 604 437-1947
Wang Ming Chang 1078a Willard Slap
Pl
Wang Ming Chang 1078a Willard Slap
Pl ---- 604 984-0211
Wang Ming Chun 202-1500 Ave Sry ---- 604 584-3997
Wang Ming Chun 202-1500 Ave Sry ---- 604 584-3997
Wang Ming Fei 3076 Edgehill Rmd Cov ---- 604 941-8441
Wang Ming Hsiung 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Ming Hsiung 4566-3098 St Lang
Cr ---- 604 514-5402
Wang Ming Hung 270 E Lansdowne
Rmd
Wang Ming Ling 11310-161 St Sry ---- 604 581-3128
Wang Mingli 107-4677 Fraserwood Wy ---- 604 270-2669
Wang Mingli 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Mingli 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Mingli 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Min Hua 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Min-Hung 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Min Jie 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Min Jie 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Min-Yung 1-1600 Sandhurst Pl Lmd ---- 604 532-8849
Wang Min

Wang Jian Qiao 121 Lorol 604 321-3478
Wang Jianbo Bus 604 822-6045
2207- 3970 Carrigan Crt, Bby
Wang Jianchang
#1108-6 Lagoon Dr, Port Moody 604 941-3553
Wang Jianhong & Liang Xiaoxia 604 244-9638
Wang Jianhua 3185 Duvall Cres 604 943-8216
Wang Jianhua
#601-12288 Kassandra Cres 604 808-2086
Wang Jianhua 6433 Fourth Bby 604 709-0054
Wang Jianhua 4116 E 32nd Vcr 604 435-4344
Wang Jiao 4298 E 24th Vcr 604 453-6166
Wang Jiasi 5093 Watergate Pl Bby 604 437-5231
Wang Jie 2-7130 Barnet Rd Bby 604 299-3382
Wang Jie 110- 5645 Hampton Pl 604 271-4430
Wang Jia
313-5488 Willington Ave Bby 604 669-4531
Wang Jianshun 808 W 42nd Vcr 604 266-3019
Wang Jin Shun 8838 W 42nd Vcr 604 263-1888
Wang Jing 2- 7128 Bligh Ave Bby 604 299-9410
Wang Jinghua 6307 Beaverridge Pl 604 277-1431
Wang Jinmin 2668 W 42nd Vcr 604 266-8811
Wang Jinmin 1010 Chilco St 604 669-3011
Wang Jinqing Bacara 604 299-5081
Wang Jinqing 107 Sydney Bby 604 299-9687
Wang Jin-Zhou 5060 Gilpin Bby 604 298-0282
Wang Jinzhou 3- 4460 Juneau St Bby 604 299-0000
Wang Jiqing 406- 341 Gilmour Bby 604 298-0000
Wang Jisi 5055 Kincaid Bby 604 298-0000
Wang Jishun
#5- 2109 Hastings Bby 604 298-0000
Wang Jiuhua 1145 Lillooet Bby 604 298-0000
Wang Jun 3038 E 44th Vcr 604 435-0000
Wang Jun 945- 8th St New Wm 604 520-0000
Wang Jing Rd 118- 3500 7th Ave 604 298-0000
Wang Jun 6112 Bell Bby 604 298-0000
Wang Jun 211- 5400 Dunblane Bby 604 298-0000
Wang Junfeng 3246 Cambridge Bby 604 298-0000
Wang Jia 9-103-3942 Fraser Vcr 604 874-0000
Wang Kai
Wang Kai 1- 12716 Fairchild Crt 604 241-0000
Wang Kai 5668 W 42nd Vcr 604 263-0000
Wang Kaiwen 604 298-0000
Wang Kaiyuan 7888 Cambie Rd Rch 604 821-0000
Wang Ke Bin 3076 Rae Ave 604 298-0000
Wang Ke Ping 7960 Chester St Bby 604 298-0000
Wang Kejun 6156 Kincaid St Bby 604 298-0000
Wang Kin C F 604 298-0000
Wang Kin Cheung 6 Cascade Crs 604 298-0000
Wang Lanchun 6 Brockton Bby 604 298-0000
Wang Lanchun 6 Brockton Bby 604 298-0000
Wang Lei 5060 Gilpin Bby 604 298-0000
Wang Lei 5055 Kincaid Bby 604 298-0000
Wang Leo 5055 Kincaid Bby 604 298-0000
Wang Li 2- 3733 Norfolk Bby 604 298-0000
Wang Li 406- 3733 Wall 604 298-0000
Wang Lianhua 3155 Vcr 604 298-0000
Wang Liankun
206- 4130 Maywood Bby 604 298-0000
Wang Lingkai 4849 Norlaes 604 298-0000
Wang Lu 1- 6 ..... 604 298-0000
Wang Lu 1- 6 ..... 604 298-0000
Wang Lu 1- 6

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Find A Business | Reverse Lookup | Maps & Directions | 411.info

Canadian Online Directory Services

Find a Domain

M Wang Public Records Search!

Searched terms: "[redacted] BC"

99+ Total Results

« Prev 10 | 1-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-99 | Next 10 »

» 41 / 99+

More Info for M Wang

[redacted]

M Wang Is In Our Database! Click Here
Did you go to school with M Wang?
Instant Background Check by PeopleData

Send Fresh Flowers | Search Picture Personals | Search by Age | FREE CREDIT REPORT

more below

AOL 8.0 PLUS Unlimited FREE hours for 45 days

More powerful spam-blocking

Enhanced Parental Controls

FREE e-mail virus-scan

THIS is Exhibit "A" to the Affidavit of [redacted] sworn before me this 29 day of [redacted] A.D. 2003 in the City of Vancouver, in the Province of British Columbia

Commissioner for taking Affidavits for British Columbia

more below

People S

Enter Full

Searc

People Search Background Checks Satellite Photos

Wang, M

2076 Qualicum Dr
Vancouver, BC V5P2M2
(604) 432-6769

» 42 / 99+

More Info for M Wang

M Wang Is In Our Database! Click Here
Did you go to school with M Wang?
Instant Background Check by PeopleData

Send Fresh Flowers | Search Picture Personals | Search by Age | FREE CREDIT REPORT

Wang, M

» 43 / 99+

Dream: I hop
attend colleg
then teach at

411 DIRECTORY | FIND A DOMAIN | HOST YOUR SITE | MARKET DATA | FIND A JOB

Find A Person | Find A Business | Maps & Directions | 411.info

Canadian Online Directory Services

Find a Domain

M Wang's Public Records Search!

Search Information:
Searched terms: [redacted]

1 Result

» 1 / 1

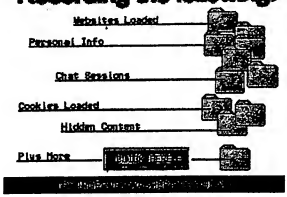
Wang, M

[redacted]

More Info for M Wang

M Wang Is In Our Database! Click Here
Did you go to school with M Wang?
Instant Background Check by PeopleData

Send Fresh Flowers | Search Picture Personals | Search by Age | FREE CREDIT REPORT



People S

Enter Full

Searc

People Search Background Checks Satellite Photos

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411 DIRECTORY | FIND A DOMAIN | BUILD YOUR SITE | MARKET DATA | FIND A JOB

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4569 Earles
Vancouver, BC V5R3R1
(604) 438-0933

M Wang Is In Our Database! Click Here
Did you go to school with M Wang?
Instant Background Check by PeopleData

More Info for M Wang

» 44 / 99+

Wang, M
6226 Elliott St
Vancouver, BC V5S2M3
(604) 431-8698

M Wang Is In Our Database! Click Here
Did you go to school with M Wang?
Instant Background Check by PeopleData

More Info for M Wang

» 45 / 99+

Wang, M
433 42nd Ave W
Vancouver, BC V5Y2T3
(604) 322-9568

M Wang Is In Our Database! Click Here
Did you go to school with M Wang?
Instant Background Check by PeopleData

More Info for M Wang

» 46 / 99+

Wang, M
433 W 42nd
Vancouver, BC V5Y2T3
(604) 322-9578

M Wang Is In Our Database! Click Here
Did you go to school with M Wang?
Instant Background Check by PeopleData

More Info for M Wang

» 47 / 99+

Wang, M
2 6062nd Willow
Vancouver, BC V5Z3S6
(604) 261-3398

M Wang Is In Our Database! Click Here
Did you go to school with M Wang?
Instant Background Check by PeopleData

More Info for M Wang

» 48 / 99+

Wang, M
[redacted]

M Wang Is In Our Database! Click Here
Did you go to school with M Wang?
Instant Background Check by PeopleData

More Info for M Wang

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Find A Person | Find A Business | Maps & Directions | 411.info

Canadian Online Directory Services

Find a Domain

Reverse Phone by Area Code and Number

Area Code Phone Number

Search

» **Reverse lookups in bulk – ¢ a hit**

Reverse phone searches can find regular phone numbers, toll-free numbers as well as numbers with characters. For example: (206) 621-1606, (800) 468-5865 or (800) STARBUC.

Reverse Address

House Number

(e.g. "742")

Street Name

(e.g. "Evergreen Terrace")

City or Postal Code

Province

Select a Province

Search

» **Batch address lookups – ¢ a hit**

Trouble finding the right street name? Try leaving out the street type, i.e. - Street, Avenue, Boulevard, Way, etc. Larger towns and cities might have multiple streets with the same name. A broader search could help you find the right street address combination.

Codes by City & Province

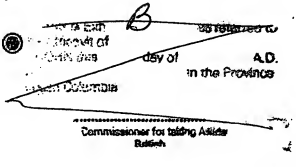
City

People S

Enter Full

Searc

People Search | Background Checks | Satellite Photos



No. S034859
Vancouver Registry

In the Supreme Court of British Columbia

Between

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

Defendant/Respondent

AFFIDAVIT OF ATTEMPTED SERVICE OF DARLENE THORNHILL

GLENN J. NIEMELA
Barrister & Solicitor
Suite 1010, 1188 West Georgia Street
PO Box No. 46, Vancouver, BC, V6E 4A2
Facsimile: (604)689-7798
Telephone: (604) 689-7799

File No. 932609

VANCOUVER
JAN 13 2004
REGISTRY

File No. S034859
Vancouver Registry

IN THE SUPREME COURT OF BRITISH COLUMBIA

BETWEEN:

Digital Accelerator Corporation

PLAINTIFF

AND:

Meng Wang

DEFENDANT

AFFIDAVIT OF ATTEMPTED SERVICE

I Michael Yamamoto, Process Server of 93-12571 Cambie Rd Richmond, British Columbia, MAKE OATH AND SAY AS FOLLOWS:

1. That on Wednesday the 24th day of September 2003, at 7:22 in the afternoon, I attended the address A310-688 Fairchild Rd. Vancouver, British Columbia. At this time I attempted to serve Meng Wang, with the Writ of Summons and Statement of Claim. That a true copy of the same is attached as Exhibit "A". That at this time there was no answer on the intercom.

2. That I did attempt to serve the Defendant on September 25th 5:10 in the afternoon, which there was no answer on the intercom.

3. That I did again attend this address on September 26th 2003, at 11:35 in the forenoon, which there was no answer on the intercom. That I did speak to the caretaker who stated the Defendant moved out of the premises around June/July 2003.

SWORN BEFORE ME at Vancouver
In the Province of British Columbia
This 7 day of October 2003.

Michael Yamamoto

A COMMISSIONER FOR TAKING AFFIDAVITS
WITHIN BRITISH COLUMBIA.

ALL-STATE LEGAL
EXHIBIT
E

SUPREME COURT
OF BRITISH COLUMBIA
SEP. 29 2003
VANCOUVER
REGISTRY

S034859

Form 1
(Rule 8(3))

No.
Vancouver Registry

In the Supreme Court of British Columbia

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

WRIT OF SUMMONS

(Name and address of each plaintiff)
Digital Accelerator Corporation
c/o Glenn J. Niemela
Barrister and Solicitor
Suite 1010, 1188 West Georgia Street
PO Box No. 46, Vancouver, BC, V6E 4A2
Telephone: (604) 689-7799
Facsimile: (604) 689-7798

(Name and address of each defendant)
Meng Wang
A310 - 688 Fairchild Road
Vancouver, British Columbia, V5Z 4P7

This is Exhibit "1" referred to in the affidavit of Michael Yamamoto sworn before me at Vancouver this 14 day of October 2003

A Commissioner for taking Affidavits within British Columbia

ELIZABETH THE SECOND, by the Grace of God, of the United Kingdom, Canada and Her other Realms and Territories, Queen, Head of the Commonwealth, Defender of the Faith.

To the defendant(s): *Meng Wang*

TAKE NOTICE that this action has been commenced against you by the plaintiff for the claim set out in this writ.

IF YOU INTEND TO DEFEND this action, or if you have a set off or counterclaim that you wish to have taken into account at the trial, YOU MUST

(a) GIVE NOTICE of your intention by filing a form entitled "Appearance" in the above registry of this

court, at the address shown below, within the Time for Appearance provided for below and YOU MUST ALSO DELIVER a copy of the Appearance to the plaintiff's address for delivery, which is set out in this writ, and

(b) if a statement of claim is provided with this writ of summons or is later served on or delivered to you, FILE a Statement of Defence in the above registry of this court within the Time for Defence provided for below and DELIVER a copy of the Statement of Defence to the plaintiff's address for delivery.

YOU OR YOUR SOLICITOR may file the Appearance and the Statement of Defence. You may obtain a form of Appearance at the registry.

JUDGMENT MAY BE TAKEN AGAINST YOU IF

(a) YOU FAIL to file the Appearance within the Time for Appearance provided for below, or

(b) YOU FAIL to file the Statement of Defence within the Time for Defence provided for below.

TIME FOR APPEARANCE

If this writ is served on a person in British Columbia, the time for appearance by that person is 7 days from the service (not including the day of service).

If this writ is served on a person outside British Columbia, the time for appearance by that person after service, is 21 days in the case of a person residing anywhere within Canada, 28 days in the case of a person residing in the United States of America, and 42 days in the case of a person residing elsewhere.

[or, if the time for appearance has been set by order of the court, within that time.]

TIME FOR DEFENCE

A Statement of Defence must be filed and delivered to the plaintiff within 14 days after the later of

(a) the time that the Statement of Claim is served on you (whether with this writ of summons or otherwise) or is delivered to you in accordance with the Rules of Court, and

(b) the end of the Time for Appearance provided for above.

[or, if the time for defence has been set by order of the court, within that time.]

(1) The address of the registry is: 800 Smithe Street Vancouver, BC V6Z 2E1
(2) The plaintiff's ADDRESS FOR DELIVERY is: Digital Accelerator Corporation c/o Glenn J. Niemela Barrister and Solicitor Suite 1010, 1188 West Georgia Street PO Box No. 46, Vancouver, BC, V6E 4A2 Facsimile for Delivery: (604) 689-7798
(3) The name and office address of the plaintiff's solicitor is: Same as above.

The plaintiff's claim is:

(See attached statement of claim in Form 13)

Dated: September 9, 2003

Glenn J. Niemela, solicitor for the plaintiff,
Digital Accelerator Corporation

This WRIT OF SUMMONS is filed by Glenn J. Niemela, Barrister and Solicitor of Suite 1010, 1188 West Georgia Street, PO Box 46, Vancouver, BC, V6E 4A2, Telephone: (604) 689-7799, Facsimile for Delivery: (604) 689-7798, File No. 932609.

Form 13
(Rule 20(1))

No.
Vancouver Registry

In the Supreme Court of British Columbia

Between

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

STATEMENT OF CLAIM

1. The Plaintiff, Digital Accelerator Corporation, is a corporation continued under the laws of Canada and has an address for service at Suite 1010 - 1188 West Georgia Street, PO Box 46, Vancouver, BC, V6E 4A2.

2. The Defendant, Meng Wang, is a scientist and resides at A310 - 688 Fairchild Road, Vancouver, BC, V5Z 4P7.

Background

3. The Plaintiff was incorporated in June of 1997 and since that time has been engaged in the research and development of specialized computer software and hardware intended for use in the compression, storage, management and transmission of digital images (the "DAC Technologies").

4. The Defendant was employed by the Plaintiff on a full time basis from approximately July of 1997 until approximately October of 2001. Throughout the course of his

employment by the Plaintiff, the Defendant was a senior officer of the Plaintiff, holding the office of Chief Scientist, and was responsible for overseeing and managing all aspects of the Plaintiff's research and development.

5. In March, 1999 the Plaintiff and the Defendant executed a renewal employment agreement (the "Wang Contract") which remained in effect until the termination of the Defendant's employment in the Fall of 2001.

6. The Defendant's principal responsibilities within the executive management of the Plaintiff included:

(a) managing all key scientific staff of the Plaintiff;

(b) overseeing the scientific program of the Plaintiff;

(c) coordinating the recording and documentation of all material technical developments of the Plaintiff, including the preparation of the Plaintiff's international patent applications; and

(d) coordinating the technical components of key discussions and negotiations with potential customers of the Plaintiff.

7. During the course of the Defendant's employment as Chief Scientist of the Plaintiff, the Plaintiff developed a series of proprietary software and applications in the areas of Still Image Coding (Photo ID, General Image, Medical and Biometric Applications), Video Compression, Video on Demand (VOD) and Streaming Video on Demand (SVOD). The Plaintiff's technologies are the subject of six international patent applications, most of which were co-authored or managed by the Defendant.

8. In addition, during the period roughly between 1999 and 2001, the Defendant was instrumental in the development and implementation of a business development strategy for Asia. During this period, the Defendant visited Asia on behalf of the Plaintiff approximately nine times.

9. During 2001, the Defendant indicated on several occasions that he had difficulty working with certain members of the senior management team of the Plaintiff. In particular, the Defendant indicated to management his dissatisfaction with the manner in which the Plaintiff was seeking to commercialize its products in Asia.

10. In the Fall of 2001, the Defendant resigned his position with the Plaintiff.

11. Despite requests made by the Plaintiff, the Defendant has failed to return or account for any of the intellectual or tangible property of the Plaintiff which were in the possession or control of the Defendant at the time of his resignation, including without limitation a computer and cellular telephone in the possession of the Defendant.

12. The Wang Contract provided, *inter alia*, for covenants of non-competition and non-disclosure. More specifically, the Wang Contract provided:

(a) that the Defendant would not, at any time prior to February 28, 2004, engage in or have any involvement with any business in North America or Asia which was competitive with the business of the Plaintiff;

(b) that the Defendant would not, at any time prior to February 28, 2004, solicit any customer or potential customer of the Plaintiff for any purpose competitive with the business of the Plaintiff;

(c) that the Defendant would not, at any time prior to February 28, 2004, solicit recruit, solicit, hire or recommend the hiring of any person who was employed by the Plaintiff or its affiliates at any time during the 12 month period prior to the last day of employment with the Corporation;

(d) that the Defendant would, at all times during the term of the Wang Contract and at all times thereafter, hold all of the intellectual property, know-how and trade secrets of the Plaintiff in secrecy as trustee or custodian for the Plaintiff, and do all reasonable acts and things to assist the Plaintiff and its affiliates in maintaining the secrecy of such property;

(e) that the Defendant would not at any time, either during the term of the Wang Contract or thereafter, disclose or divulge, directly or indirectly, to any person, firm or corporation any of the information and trade secrets and know-how of the Plaintiff, or use any of such property other than for the benefit of the Corporation or its affiliates;

(f) that all instructions, drawings, notes, memoranda, inventions, patents and other industrial property relating to the business of the Plaintiff or its affiliates made or conceived by the Defendant during the term hereof or which may come into his possession during the term of the Wang Contract and which relate in any way to or embody any of the information, trade secrets or know-how of the Plaintiff or any research done for the Plaintiff shall be the exclusive property of the Plaintiff;

(g) that the Defendant would communicate and assign to the Plaintiff all discoveries, concepts, inventions or improvements, whether patentable or not, made, discovered, conceived, invented or improved by the Defendant as well as any ideas, plans, concepts, copyrightable materials, copyrights, trademarks, trade dress and any other intellectual property conceived or created by the Defendant

(hereinafter collectively call the "IP Rights") during the tern of the Wang Contract which in any way relate to any process, formula, plan, skill, method of advertising, marketing, research, equipment, device, or method of doing business, developed or being developed, made, used, sold or installed by or made known to the Defendant during the period of his employment by the Plaintiff or resulting from or suggested by any work which the Defendant may do for the Plaintiff or its affiliates at the request of the Plaintiff or its affiliates and relating to any business carried on or proposed to be carried on by the Plaintiff or its affiliates;

(h) that the Defendant would at all times (both during the tern of the Wang Contract and at all times thereafter) assist the Plaintiff, its affiliates or their respective assignees or their nominees in every way to protect the intellectual property rights of the Plaintiff and its affiliates.

13. Following his resignation from the Plaintiff, the Defendant knowingly began developing business opportunities in the digital media industry which were directly competitive with the business of the Plaintiff.

14. In or about October of 2001 the Defendant solicited an employee of the Plaintiff, Yi Xiong, to request sick leave from the Plaintiff and to work with the Defendant. At the time, Mr. Yi was employed by the Plaintiff as Project Leader - Research Scientist and had extensive knowledge of the DAC Technologies and processes.

15. On March 4, 2002, the Defendant incorporated a British Columbia company, Transcodec Technologies Ltd. (herein "Transcodec"), for the purpose of continuing the business carried on by the Defendant subsequent to his resignation as an employee of the Plaintiff. Transcodec has since been voluntarily dissolved on July 29, 2003.

16. The Defendant continues to operate his business in a form known to him under his personal name or under another corporate entity unknown to the Plaintiff.

17. During the period October, 2001 through March, 2003, the Defendant and/or Transcodec hired or engaged no fewer than three employees or former employees of the Plaintiff to work with the Defendant. All such employees were employed by the Plaintiff as research scientists, and had extensive knowledge of the DAC Technologies.

18. In addition to his dealings with the employees and former employees of the Plaintiff, and in breach of his contractual and fiduciary duties, during the period October, 2001 through March, 2003, the Defendant and/or Transcodia contacted a number of potential customers and investors of the Plaintiff for purposes competitive with the interests of the Plaintiff.

Trade Secrets

18. As Chief Scientist of the Plaintiff, the Defendant was instrumental in the development and documentation of the DAC Technologies and was intimately familiar with the confidential intellectual property and information of the Plaintiff.

19. The confidential intellectual property and information were and continue to be trade secrets of the Plaintiff and were communicated to the Defendant in confidence for the limited purpose of enabling the Defendant to further the Plaintiff's interests.

20. The Defendant received the confidential information or trade secrets knowing the limited purpose for which it was communicated to him and his contractual obligation under the terms of the Wang Contract to keep the information confidential.

21. The Defendant had and has a contractual obligation, and owes and owed a duty of trust and confidence, a fiduciary duty and a statutory duty to the Plaintiff in respect of the confidential information or trade secrets, and each part thereof, and was not and is not entitled to use the confidential information or trade secrets, or any part thereof, without the prior consent of the Plaintiff for any purpose other than that for which it was supplied to him by the Plaintiff.

22. Subsequently, in breach of such duties and obligations owed to the Plaintiff and without the Plaintiff's consent, the Defendant made use of the confidential information or trade secrets of the Plaintiff and has unlawfully made or seeks to make profits for himself.

23. The use by the Defendant and/or Transcodec or other corporate entities unknown to the Plaintiff, of confidential information or trade secrets that belonged to the Plaintiff constitutes an unlawful appropriation to the Defendant and/or Transcodec's, or other corporate entities' own use of the Plaintiff's property, and a wrongful conversion of the Plaintiff's assets.

24. The Defendant or corporate entities unknown to the Plaintiff, and each of them, threaten and intend to continue to use the confidential information or trade secrets to make profits for themselves.

25. By reason of the actions of the Defendants and each of them, the Plaintiff has suffered and continues to suffer loss and damage.

Copyright Infringement

26. The Plaintiff is the author of numerous software designs and related works comprising the DAC Technologies which have come into being since 1997 to date, and is the owner of the copyright therein.

27. The DAC Technologies and the copyright therein were authored exclusively by employees of the Plaintiff or contractors to the Plaintiff who have assigned and transferred to the Plaintiff all of their right, title and interest in and to the copyright in such works.

28. The Defendant infringed the Plaintiff's copyright in the work by developing, seeking to develop, marketing and purporting to own certain key elements of the DAC Technologies relating to the compression, storage, management and distribution of digital video images using a variable bit rate coding, in all cases without the consent of the Plaintiff.

29. By reason of the acts of the Defendant, the Plaintiff has suffered loss and damage.

30. The Defendant threatens and intends to continue and repeat the infringement of the Plaintiff's copyright.

Passing Off

31. The DAC Technologies consist of a unique and proprietary set of computer codes intended for use in the compression, storage, management and transmission of digital images. Included in the DAC Technologies are a suite of applications intended for use in the compression and transmission of digital video images, of particular utility for the delivery of video content over the internet (referred to as video on demand). A key unique feature of these technologies is the encoding of digital content using variable bit rates, as opposed to fixed bit rates.

32. Since 1997, the Plaintiff has adopted and used in connection with its technologies certain unique terms, including the terms "region based coding" and in later years the

term "IPTV" to describe, respectively, the Plaintiff's encoding (compression) method and the Plaintiff's digital image delivery method.

33. The use by the Plaintiff of the terms "region based coding" and "IPTV" are unique to the DAC Technologies and are known to the public as being indicative of the Plaintiff's wares, services or business. In particular, the term IPTV was used extensively by the Plaintiff in its business dealings in Asia, and the Plaintiff's key prospective customers in Asia came to recognise the term IPTV as distinctive and as distinguishing the wares, services and business of the Plaintiff.

34. Commencing in the Fall of 2001 and continuing to the present, the Defendant has frequently and consistently communicated with parties in Asia (particularly in China) that the Defendant is the owner and distributor of video encoding and transmission technologies using region based coding. The Defendant has used the term IPTV in the course of his business discussions in China, as well as on his website.

35. By reason of the activity set out in the foregoing paragraph, the Defendant has passed off and continues to pass off its wares, services and business as and for those of the Plaintiff.

36. By reason of the activities of the Defendant, the Plaintiff has suffered damage as follows:

    a. loss of profit resulting from the Plaintiff's loss of sales;
    b. loss of goodwill and depreciation of the Plaintiff's goodwill and its trademark;

37. The Defendant has refused to discontinue the acts complained of and threatens and intends to continue those acts.

The Plaintiff claims as follows:

Trade Secrets

a. an injunction to restrain the Defendant, by himself, his servants agents or otherwise, from using the confidential information or trade secrets of the Plaintiff, or any part thereof, namely, proprietary software and applications in the areas of Still Image Coding (Photo ID, General Image, Medical and Biometric Applications), Video Compression, Video on Demand (VOD) and Streaming Video on Demand (SVOD) which technologies are the subject of six (6) international patent applications, and using the plaintiff's unique terms "region based coding" and "IPTV" or otherwise exploiting the confidential information or trade secrets (or any part thereof);

b. an order for delivery up to the Plaintiff of all documents in the possession of the Defendant, as may offend the injunction sought above as (a);

c. an account of all monies, profits and benefits made and received by the Defendant, for and on account of the Plaintiff;

d. payment of the amount found to be due to the Plaintiff on taking the account;

e. a declaration that the Defendant, has breached his duty in trust and confidence to the Plaintiff;

f. a declaration that the Defendant, has breached his fiduciary duty to the Plaintiff;

g. a declaration that the Defendant, has breached his statutory duty pursuant to the *Canada Business Corporations Act* to the Defendant;

Copyright Infringement

h. an injunction restraining the Defendant, by himself, his servants, agents or otherwise from developing, seeking to develop, marketing and purporting to own certain key elements of the DAC technologies relating to the compression storage, management and distribution digital video images using a variable bit rate coding;

i. an order for delivery up to the Plaintiff (for destruction under oath) of all infringing copies of the numerous software designs and related works comprising the DAC technologies in the Defendant's possession, custody or control;

j. an account of all profits made by the Defendant, for and on account of the Plaintiff;

k. payment of the amount found to be due to the Plaintiff on taking of the account;

l. damages for infringement;

m. in the alternative, if the Plaintiff so elects in express terms before final judgment is rendered, statutory damages pursuant to s. 38.1 of the *Copyright Act* R.S.C. 1985, c C - 42, in lieu of an accounting and payment of profits and payment of damages for infringement;

n. damages for conversion;

Passing Off

o. an injunction restraining the Defendant, by himself, servants agents or otherwise from:

i. directing public attention to his wares, services and business, in such a way as to cause or to be likely to cause confusion in between his wares, services and business and the wares, services and business of the Plaintiff;

ii. passing off or attempting to pass off or causing, enabling, or assisting others to pass off or attempt to pass of its wares, services and business as and for the wares, services and business of the Plaintiff; and

iii. falsely suggesting any association between the Defendant's wares, services and business and those of the Plaintiff;

p. an order for delivery up to the Plaintiff (for destruction under oath) of all material of any kind in the possession, custody or control of the Defendant as may offend the injunction sought in (o) above;

q. damages, or an account of profits made by the Defendant, whichever the Plaintiff may, after a proper reference, elect;

General Relief

r. general damages;

s. punitive damages;

t. exemplary damages;

u. aggravated damages;

v. court order interest;

w. special costs of this action; and

x. such further and other relief as the nature of this case may require and as to this Honourable Court may seem just.

Place of trial: Vancouver, British Columbia

Dated at Vancouver, British Columbia, on September 9, 2003.

Glenn J. Niemela, solicitor for the Plaintiff,
Digital Accelerator Corporation

This STATEMENT OF CLAIM is filed by Glenn J. Niemela, Barrister and Solicitor, PO Box 46, Suite 1010, 1188 West Georgia Street, PO Box 46, Vancouver, BC, V6E 4A2, Telephone: (604) 689-7799, Facsimile: (604) 689-7798, File No. 932609.

No.
Vancouver Registry

In the Supreme Court of British Columbia

Between

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant
Defendant/Respondent

WRIT OF SUMMONS AND STATEMENT OF CLAIM

GLENN J. NIEMELA
Barrister & Solicitor
Suite 1010, 1188 West Georgia Street
PO Box No. 46, Vancouver, BC, V6E 4A2
Facsimile: (604)689-7798
Telephone: (604) 689-7799

File No. 932609

No. S034859
Vancouver Registry

In the Supreme Court of British Columbia

Between

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

Defendant/Respondent

AFFIDAVIT OF ATTEMPTED SERVICE OF MICHAEL YAMAMOTO

GLENN J. NIEMELA
Barrister & Solicitor
Suite 1010, 1188 West Georgia Street
PO Box No. 46, Vancouver, BC, V6E 4A2
Facsimile: (604)689-7798
Telephone: (604) 689-7799

File No. 932609

NO. S034859
VANCOUVER REGISTRY

VANCOUVER JAN 13 2004 REGISTRY

In the Supreme Court of British Columbia

BETWEEN:

DIGITAL ACCELERATOR CORPORATION

PLAINTIFF

AND:

MENG WANG

DEFENDANT

AFFIDAVIT OF ATTEMPTED LOCATE

I, LESLEY ORD, Office Manager, of 450 - 850 West Hastings Street, in the City of Vancouver, in the Province of British Columbia; **MAKE OATH AND SAY AS FOLLOWS:**

1. I am the Office Manager of Action Process Serving Ltd., and as such have personal knowledge of the facts and matters hereinafter deposed to save and except those which are based on information and belief, and as to such matters I verily believe them to be true.

2. On October 13, 2003 our client requested that our office locate the whereabouts of MENG WANG, so that he may be served with documents in this action.

3. On October 13th, 2003, I advised my colleague Victoria Demosky, a skiptracer, to attempt to locate the whereabouts of MENG WANG. I further advised my colleague, that the previous address for MENG WANG was A310 - 688 Fairchild, Vancouver, BC.

4. My colleague Victoria Demosky, a skip tracer informed me and I verily believe that she found that the last known address of A310 - 688 Fairchild, Vancouver, BC, was listed to a "Ligo Min" at phone number 604-269-6699. Victoria Demosky called the number and was advised by the present tenants that they had never heard of MENG WANG.

5. My colleague Victoria Demosky informed me and I verily believe that she checked with the telephone directories for British Columbia, and found several possible listings for MENG WANG, but he was not known at any of them. Victoria Demosky found that there were far to many listings for the last name "WANG" and therefore was unable to contact them all.

6. My colleague Victoria Demosky informed me and I verily believe that through confidential contacts she was informed that MENG WANG was not currently receiving any services from any utility companies and did not have any outstanding accounts.

7. My colleague Victoria Demosky informed me and I verily believe that through confidential contacts at BC Hydro she was advised that MENG WANG was not presently receiving services from BC Hydro, and did not have any outstanding accounts.

8. My colleague Victoria Demosky informed me and I verily believe that through confidential contacts she was told that MENG WANG was not currently receiving any services from any cable companies, and they did not have any outstanding accounts.

9. My colleague Victoria Demosky informed me and I verily believe that she through confidential contacts she was told that MENG WANG did not have any outstanding accounts being collected by any collections agencies.

10. My colleague Victoria Demosky informed me and I verily believe that she has exhausted all possible leads and is unable to locate the whereabouts of MENG WANG at this time.

SWORN BEFORE ME at the City of Vancouver, in the Province of British Columbia, this 10th day of December, A.D. 2003.

A COMMISSIONER FOR TAKING AFFIDAVITS FOR BRITISH COLUMBIA

LESLEY ORD

No. S034859
Vancouver Registry

In the Supreme Court of British Columbia

Between

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

Defendant/Respondent

AFFIDAVIT OF ATTEMPTED LOCATE OF LESLEY ORD

GLENN J. NIEMELA
Barrister & Solicitor
Suite 1010, 1188 West Georgia Street
PO Box No. 46, Vancouver, BC, V6E 4A2
Facsimile: (604)689-7798
Telephone: (604) 689-7799

File No. 932609

VANCOUVER
JAN 13 2011
REGISTRY

NO. S034859
VANCOUVER REGISTRY

IN THE SUPREME COURT OF BRITISH COLUMBIA

BETWEEN:

DIGITAL ACCELERATOR CORPORATION

PLAINTIFF

AND:

MENG WANG

DEFENDANT

AFFIDAVIT OF ATTEMPTED SERVICE

I, EDUARDO LOPEZ, Skip Tracer of West Coast Title Search Ltd., of #100 - 840 Howe Street, in the City of Vancouver, in the Province of British Columbia, MAKE OATH AND SAY THAT:

1. I am an employee of West Coast Title Search Ltd., and as such have personal knowledge of the matter and facts hereinafter deposed to, save and except where the same are stated to be upon information and belief, in which latter case I verily believe them to be true.

2. WE were instructed by our client, GLENN J. NIEMELA, Barrister and Solicitor, of 1010 - 1188 West Georgia Street, Vancouver, British Columbia, Counsel for the Plaintiff in this action, to locate and serve the above-mentioned MENG WANG, with a last known address of A310 - 688 Fairchild Road, Vancouver, British Columbia, with the Writ of Summons with Statement of Claim in this action a copy of which is now produced to me and marked Exhibit "A" to this my Affidavit.

3. On November 5, 2003, I was informed by a confidential source and verily believe that MENG WANG's current residential address is 306 - 7288 No. 3 Road, Richmond, British Columbia, with a telephone number being, 604-278-9818. I then dialled the said telephone number, 604-278-9818 and spoke with an adult female who identified herself as MENG WANG's wife, and informed me that she was separated with MENG WANG. MENG WANG's wife refused to provide any information regarding MENG WANG's current whereabouts.

4. I am informed and verily believe that BRADLEY R. FRASER, Process Server with West Coast Title Search Ltd., did at 10:55 a.m., Thursday, November 20, 2003, attend the said address, 7288 No. 3 Road, Richmond, B.C., and found the intercom to be coded. FRASER then gained entry into the building, attended suite 306 and spoke with YI WU, MENG WANG's wife, who informed him that MENG WANG had moved out in June 2003 and that she did not know MENG WANG's current address or telephone number. YI WU then informed FRASER that MENG WANG occasionally emails their son, but that she did not know MENG WANG's email address.

5. I am informed and verily believe that BRADLEY R. FRASER, did at 9:15 a.m., Sunday, November 23, 2003, attend the said address, 7288 No. 3 Road, Richmond, B.C., and gained entry into the building. FRASER then attended suite 306 and spoke with YI WU, who informed him that she did not know MENG WANG's current whereabouts.

6. I am informed and verily believe that BRADLEY R. FRASER, did at 3:10 p.m., Monday, November 24, 2003, attend the last known address, 688 Fairchild Road, Vancouver, B.C., and found the intercom to be coded. At that time, the concierge admitted FRASER into the building and he attended suite A310 and spoke with an Asian adult female who appeared to be in her twenties, who informed FRASER that the said residence was occupied by the LIAO family and that they had moved into the said address 3 months ago and did not know MENG WANG.

7. It is my belief that if the documents in this action were left at MENG WANG's wife's address, #306 - 7288 No 3 Road, Richmond, B.C., they would soon come to the attention of MENG WANG.

8. I am making this Affidavit in support of an Application to effect service substitutionally upon the said, MENG WANG.

Sworn before me in the City of VANCOUVER, British Columbia, this 10TH day of December, 2003

EDUARDO LOPEZ

A Commissioner For Taking Affidavits
For British Columbia

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MICHAEL J. STEVEN
Barrister & Solicitor
5687 Yew St - Suite 300
Vancouver, BC V6M 3Y2
Tel: 604-263-2565

SUPREME COURT
OF BRITISH COLUMBIA
SEP. 29 2003
VANCOUVER
REGISTRY

S034859

Form 1
(Rule 8(3))

No.
Vancouver Registry

In the Supreme Court of British Columbia

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

WRIT OF SUMMONS

(Name and address of each plaintiff)
Digital Accelerator Corporation
c/o Glenn J. Niemela
Barrister and Solicitor
Suite 1010, 1188 West Georgia Street
PO Box No. 46, Vancouver, BC, V6E 4A2
Telephone: (604) 689-7799
Facsimile: (604) 689-7798

(Name and address of each defendant)
Meng Wang
A310 - 688 Fairchild Road
Vancouver, British Columbia, V5Z 4P7

This is Exhibit "A" referred to in the affidavit of EDUARDO LOPEZ sworn before me on this 10TH day of DECEMBER, 2003

A Commissioner for taking Affidavits in and for the Province of British Columbia

ELIZABETH, THE SECOND, by the Grace of God, of the United Kingdom, Canada and Her other Realms and Territories, Queen, Head of the Commonwealth, Defender of the Faith.

To the defendant(s): *Meng Wang*

TAKE NOTICE that this action has been commenced against you by the plaintiff for the claim set out in this writ.

IF YOU INTEND TO DEFEND this action, or if you have a set off or counterclaim that you wish to have taken into account at the trial, YOU MUST

(a) GIVE NOTICE of your intention by filing a form entitled "Appearance" in the above registry of this

court, at the address shown below, within the Time for Appearance provided for below and YOU MUST ALSO DELIVER a copy of the Appearance to the plaintiff's address for delivery, which is set out in this writ, and

(b) if a statement of claim is provided with this writ of summons or is later served on or delivered to you, FILE a Statement of Defence in the above registry of this court within the Time for Defence provided for below and DELIVER a copy of the Statement of Defence to the plaintiff's address for delivery.

YOU OR YOUR SOLICITOR may file the Appearance and the Statement of Defence. You may obtain a form of Appearance at the registry.

JUDGMENT MAY BE TAKEN AGAINST YOU IF

(a) YOU FAIL to file the Appearance within the Time for Appearance provided for below, or

(b) YOU FAIL to file the Statement of Defence within the Time for Defence provided for below.

TIME FOR APPEARANCE

If this writ is served on a person in British Columbia, the time for appearance by that person is 7 days from the service (not including the day of service).

If this writ is served on a person outside British Columbia, the time for appearance by that person after service, is 21 days in the case of a person residing anywhere within Canada, 28 days in the case of a person residing in the United States of America, and 42 days in the case of a person residing elsewhere.

[or, if the time for appearance has been set by order of the court, within that time.]

TIME FOR DEFENCE

A Statement of Defence must be filed and delivered to the plaintiff within 14 days after the later of

(a) the time that the Statement of Claim is served on you (whether with this writ of summons or otherwise)

or is delivered to you in accordance with the Rules of Court, and

(b) the end of the Time for Appearance provided for above.

[or, if the time for defence has been set by order of the court, within that time.]

(1) The address of the registry is: 800 Smithe Street Vancouver, BC V6Z 2E1
(2) The plaintiff's ADDRESS FOR DELIVERY is: Digital Accelerator Corporation c/o Glenn J. Niemela Barrister and Solicitor Suite 1010, 1188 West Georgia Street PO Box No. 46, Vancouver, BC, V6E 4A2 Facsimile for Delivery: (604) 689-7798
(3) The name and office address of the plaintiff's solicitor is: Same as above.

The plaintiff's claim is:

(See attached statement of claim in Form 13)

Dated: September 9, 2003

Glenn J. Niemela, solicitor for the plaintiff,
Digital Accelerator Corporation

This WRIT OF SUMMONS is filed by Glenn J. Niemela, Barrister and Solicitor of Suite 1010, 1188 West Georgia Street, PO Box 46, Vancouver, BC, V6E 4A2, Telephone: (604) 689-7799, Facsimile for Delivery: (604) 689-7798, File No. 932609.

Form 13
(Rule 20(1))

No.
Vancouver Registry

In the Supreme Court of British Columbia

Between

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

STATEMENT OF CLAIM

1. The Plaintiff, Digital Accelerator Corporation, is a corporation continued under the laws of Canada and has an address for service at Suite 1010 - 1188 West Georgia Street, PO Box 46, Vancouver, BC, V6E 4A2.

2. The Defendant, Meng Wang, is a scientist and resides at A310 - 688 Fairchild Road, Vancouver, BC, V5Z 4P7.

Background

3. The Plaintiff was incorporated in June of 1997 and since that time has been engaged in the research and development of specialized computer software and hardware intended for use in the compression, storage, management and transmission of digital images (the "DAC Technologies").

4. The Defendant was employed by the Plaintiff on a full time basis from approximately July of 1997 until approximately October of 2001. Throughout the course of his

employment by the Plaintiff, the Defendant was a senior officer of the Plaintiff, holding the office of Chief Scientist, and was responsible for overseeing and managing all aspects of the Plaintiff's research and development.

5. In March, 1999 the Plaintiff and the Defendant executed a renewal employment agreement (the "Wang Contract") which remained in effect until the termination of the Defendant's employment in the Fall of 2001.

6. The Defendant's principal responsibilities within the executive management of the Plaintiff included:

(a) managing all key scientific staff of the Plaintiff;

(b) overseeing the scientific program of the Plaintiff;

(c) coordinating the recording and documentation of all material technical developments of the Plaintiff, including the preparation of the Plaintiff's international patent applications; and

(d) coordinating the technical components of key discussions and negotiations with potential customers of the Plaintiff.

7. During the course of the Defendant's employment as Chief Scientist of the Plaintiff, the Plaintiff developed a series of proprietary software and applications in the areas of Still Image Coding (Photo ID, General Image, Medical and Biometric Applications), Video Compression, Video on Demand (VOD) and Streaming Video on Demand (SVOD). The Plaintiff's technologies are the subject of six international patent applications, most of which were co-authored or managed by the Defendant.

8. In addition, during the period roughly between 1999 and 2001, the Defendant was instrumental in the development and implementation of a business development strategy for Asia. During this period, the Defendant visited Asia on behalf of the Plaintiff approximately nine times.

9. During 2001, the Defendant indicated on several occasions that he had difficulty working with certain members of the senior management team of the Plaintiff. In particular, the Defendant indicated to management his dissatisfaction with the manner in which the Plaintiff was seeking to commercialize its products in Asia.

10. In the Fall of 2001, the Defendant resigned his position with the Plaintiff.

11. Despite requests made by the Plaintiff, the Defendant has failed to return or account for any of the intellectual or tangible property of the Plaintiff which were in the possession or control of the Defendant at the time of his resignation, including without limitation a computer and cellular telephone in the possession of the Defendant.

12. The Wang Contract provided, *inter alia*, for covenants of non-competition and non-disclosure. More specifically, the Wang Contract provided:

    (a) that the Defendant would not, at any time prior to February 28, 2004, engage in or have any involvement with any business in North America or Asia which was competitive with the business of the Plaintiff;

    (b) that the Defendant would not, at any time prior to February 28, 2004, solicit any customer or potential customer of the Plaintiff for any purpose competitive with the business of the Plaintiff;

(c) that the Defendant would not, at any time prior to February 28, 2004, solicit recruit, solicit, hire or recommend the hiring of any person who was employed by the Plaintiff or its affiliates at any time during the 12 month period prior to the last day of employment with the Corporation;

(d) that the Defendant would, at all times during the term of the Wang Contract and at all times thereafter, hold all of the intellectual property, know-how and trade secrets of the Plaintiff in secrecy as trustee or custodian for the Plaintiff, and do all reasonable acts and things to assist the Plaintiff and its affiliates in maintaining the secrecy of such property;

(e) that the Defendant would not at any time, either during the term of the Wang Contract or thereafter, disclose or divulge, directly or indirectly, to any person, firm or corporation any of the information and trade secrets and know-how of the Plaintiff, or use any of such property other than for the benefit of the Corporation or its affiliates;

(f) that all instructions, drawings, notes, memoranda, inventions, patents and other industrial property relating to the business of the Plaintiff or its affiliates made or conceived by the Defendant during the term hereof or which may come into his possession during the term of the Wang Contract and which relate in any way to or embody any of the information, trade secrets or know-how of the Plaintiff or any research done for the Plaintiff shall be the exclusive property of the Plaintiff;

(g) that the Defendant would communicate and assign to the Plaintiff all discoveries, concepts, inventions or improvements, whether patentable or not, made, discovered, conceived, invented or improved by the Defendant as well as any ideas, plans, concepts, copyrightable materials, copyrights, trademarks, trade dress and any other intellectual property conceived or created by the Defendant

(hereinafter collectively call the "IP Rights") during the tern of the Wang Contract which in any way relate to any process, formula, plan, skill, method of advertising, marketing, research, equipment, device, or method of doing business, developed or being developed, made, used, sold or installed by or made known to the Defendant during the period of his employment by the Plaintiff or resulting from or suggested by any work which the Defendant may do for the Plaintiff or its affiliates at the request of the Plaintiff or its affiliates and relating to any business carried on or proposed to be carried on by the Plaintiff or its affiliates;

(h) that the Defendant would at all times (both during the tern of the Wang Contract and at all times thereafter) assist the Plaintiff, its affiliates or their respective assignees or their nominees in every way to protect the intellectual property rights of the Plaintiff and its affiliates.

13. Following his resignation from the Plaintiff, the Defendant knowingly began developing business opportunities in the digital media industry which were directly competitive with the business of the Plaintiff.

14. In or about October of 2001 the Defendant solicited an employee of the Plaintiff, Yi Xiong, to request sick leave from the Plaintiff and to work with the Defendant. At the time, Mr. Yi was employed by the Plaintiff as Project Leader - Research Scientist and had extensive knowledge of the DAC Technologies and processes.

15. On March 4, 2002, the Defendant incorporated a British Columbia company, Transcodec Technologies Ltd. (herein "Transcodec"), for the purpose of continuing the business carried on by the Defendant subsequent to his resignation as an employee of the Plaintiff. Transcodec has since been voluntarily dissolved on July 29, 2003.

16. The Defendant continues to operate his business in a form known to him under his personal name or under another corporate entity unknown to the Plaintiff.

17. During the period October, 2001 through March, 2003, the Defendant and/or Transcodec hired or engaged no fewer than three employees or former employees of the Plaintiff to work with the Defendant. All such employees were employed by the Plaintiff as research scientists, and had extensive knowledge of the DAC Technologies.

18. In addition to his dealings with the employees and former employees of the Plaintiff, and in breach of his contractual and fiduciary duties, during the period October, 2001 through March, 2003, the Defendant and/or Transcodia contacted a number of potential customers and investors of the Plaintiff for purposes competitive with the interests of the Plaintiff.

Trade Secrets

18. As Chief Scientist of the Plaintiff, the Defendant was instrumental in the development and documentation of the DAC Technologies and was intimately familiar with the confidential intellectual property and information of the Plaintiff.

19. The confidential intellectual property and information were and continue to be trade secrets of the Plaintiff and were communicated to the Defendant in confidence for the limited purpose of enabling the Defendant to further the Plaintiff's interests.

20. The Defendant received the confidential information or trade secrets knowing the limited purpose for which it was communicated to him and his contractual obligation under the terms of the Wang Contract to keep the information confidential.

21. The Defendant had and has a contractual obligation, and owes and owed a duty of trust and confidence, a fiduciary duty and a statutory duty to the Plaintiff in respect of the confidential information or trade secrets, and each part thereof, and was not and is not entitled to use the confidential information or trade secrets, or any part thereof, without the prior consent of the Plaintiff for any purpose other than that for which it was supplied to him by the Plaintiff.

22. Subsequently, in breach of such duties and obligations owed to the Plaintiff and without the Plaintiff's consent, the Defendant made use of the confidential information or trade secrets of the Plaintiff and has unlawfully made or seeks to make profits for himself.

23. The use by the Defendant and/or Transcodec or other corporate entities unknown to the Plaintiff, of confidential information or trade secrets that belonged to the Plaintiff constitutes an unlawful appropriation to the Defendant and/or Transcodec's, or other corporate entities' own use of the Plaintiff's property, and a wrongful conversion of the Plaintiff's assets.

24. The Defendant or corporate entities unknown to the Plaintiff, and each of them, threaten and intend to continue to use the confidential information or trade secrets to make profits for themselves.

25. By reason of the actions of the Defendants and each of them, the Plaintiff has suffered and continues to suffer loss and damage.

Copyright Infringement

26. The Plaintiff is the author of numerous software designs and related works comprising the DAC Technologies which have come into being since 1997 to date, and is the owner of the copyright therein.

27. The DAC Technologies and the copyright therein were authored exclusively by employees of the Plaintiff or contractors to the Plaintiff who have assigned and transferred to the Plaintiff all of their right, title and interest in and to the copyright in such works.

28. The Defendant infringed the Plaintiff's copyright in the work by developing, seeking to develop, marketing and purporting to own certain key elements of the DAC Technologies relating to the compression, storage, management and distribution of digital video images using a variable bit rate coding, in all cases without the consent of the Plaintiff.

29. By reason of the acts of the Defendant, the Plaintiff has suffered loss and damage.

30. The Defendant threatens and intends to continue and repeat the infringement of the Plaintiff's copyright.

Passing Off

31. The DAC Technologies consist of a unique and proprietary set of computer codes intended for use in the compression, storage, management and transmission of digital images. Included in the DAC Technologies are a suite of applications intended for use in the compression and transmission of digital video images, of particular utility for the delivery of video content over the internet (referred to as video on demand). A key unique feature of these technologies is the encoding of digital content using variable bit rates, as opposed to fixed bit rates.

32. Since 1997, the Plaintiff has adopted and used in connection with its technologies certain unique terms, including the terms "region based coding" and in later years the

term "IPTV" to describe, respectively, the Plaintiff's encoding (compression) method and the Plaintiff's digital image delivery method.

33. The use by the Plaintiff of the terms "region based coding" and "IPTV" are unique to the DAC Technologies and are known to the public as being indicative of the Plaintiff's wares, services or business. In particular, the term IPTV was used extensively by the Plaintiff in its business dealings in Asia, and the Plaintiff's key prospective customers in Asia came to recognise the term IPTV as distinctive and as distinguishing the wares, services and business of the Plaintiff.

34. Commencing in the Fall of 2001 and continuing to the present, the Defendant has frequently and consistently communicated with parties in Asia (particularly in China) that the Defendant is the owner and distributor of video encoding and transmission technologies using region based coding. The Defendant has used the term IPTV in the course of his business discussions in China, as well as on his website.

35. By reason of the activity set out in the foregoing paragraph, the Defendant has passed off and continues to pass off its wares, services and business as and for those of the Plaintiff.

36. By reason of the activities of the Defendant, the Plaintiff has suffered damage as follows:

    a. loss of profit resulting from the Plaintiff's loss of sales;
    b. loss of goodwill and depreciation of the Plaintiff's goodwill and its trademark;

37. The Defendant has refused to discontinue the acts complained of and threatens and intends to continue those acts.

The Plaintiff claims as follows:

Trade Secrets

a. an injunction to restrain the Defendant, by himself, his servants agents or otherwise, from using the confidential information or trade secrets of the Plaintiff, or any part thereof, namely, proprietary software and applications in the areas of Still Image Coding (Photo ID, General Image, Medical and Biometric Applications), Video Compression, Video on Demand (VOD) and Streaming Video on Demand (SVOD) which technologies are the subject of six (6) international patent applications, and using the plaintiff's unique terms "region based coding" and "IPTV" or otherwise exploiting the confidential information or trade secrets (or any part thereof);

b. an order for delivery up to the Plaintiff of all documents in the possession of the Defendant, as may offend the injunction sought above as (a);

c. an account of all monies, profits and benefits made and received by the Defendant, for and on account of the Plaintiff;

d. payment of the amount found to be due to the Plaintiff on taking the account;

e. a declaration that the Defendant, has breached his duty in trust and confidence to the Plaintiff;

f. a declaration that the Defendant, has breached his fiduciary duty to the Plaintiff;

g. a declaration that the Defendant, has breached his statutory duty pursuant to the *Canada Business Corporations Act* to the Defendant;

Copyright Infringement

h. an injunction restraining the Defendant, by himself, his servants, agents or otherwise from developing, seeking to develop, marketing and purporting to own certain key elements of the DAC technologies relating to the compression storage, management and distribution digital video images using a variable bit rate coding;

i. an order for delivery up to the Plaintiff (for destruction under oath) of all infringing copies of the numerous software designs and related works comprising the DAC technologies in the Defendant's possession, custody or control;

j. an account of all profits made by the Defendant, for and on account of the Plaintiff;

k. payment of the amount found to be due to the Plaintiff on taking of the account;

l. damages for infringement;

m. in the alternative, if the Plaintiff so elects in express terms before final judgment is rendered, statutory damages pursuant to s. 38.1 of the *Copyright Act* R.S.C. 1985, c C - 42, in lieu of an accounting and payment of profits and payment of damages for infringement;

n. damages for conversion;

Passing Off

o. an injunction restraining the Defendant, by himself, servants agents or otherwise from:

i. directing public attention to his wares, services and business, in such a way as to cause or to be likely to cause confusion in between his wares, services and business and the wares, services and business of the Plaintiff;

ii. passing off or attempting to pass off or causing, enabling, or assisting others to pass off or attempt to pass of its wares, services and business as and for the wares, services and business of the Plaintiff; and

iii. falsely suggesting any association between the Defendant's wares, services and business and those of the Plaintiff;

p. an order for delivery up to the Plaintiff (for destruction under oath) of all material of any kind in the possession, custody or control of the Defendant as may offend the injunction sought in (o) above;

q. damages, or an account of profits made by the Defendant, whichever the Plaintiff may, after a proper reference, elect;

General Relief

r. general damages;

s. punitive damages;

t. exemplary damages;

u. aggravated damages;

v. court order interest;

w. special costs of this action; and

x. such further and other relief as the nature of this case may require and as to this Honourable Court may seem just.

Place of trial: Vancouver, British Columbia

Dated at Vancouver, British Columbia, on September 9, 2003.

Glenn J. Niemela, solicitor for the Plaintiff,
Digital Accelerator Corporation

This STATEMENT OF CLAIM is filed by Glenn J. Niemela, Barrister and Solicitor, PO Box 46, Suite 1010, 1188 West Georgia Street, PO Box 46, Vancouver, BC, V6E 4A2, Telephone: (604) 689-7799, Facsimile: (604) 689-7798, File No. 932609.

No.
Vancouver Registry

In the Supreme Court of British Columbia

Between

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

Defendant/Respondent

WRIT OF SUMMONS AND STATEMENT OF CLAIM

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No. S034859
Vancouver Registry

In the Supreme Court of British Columbia

Between

Digital Accelerator Corporation

Plaintiff

and

Meng Wang

Defendant

Defendant/Respondent

AFFIDAVIT OF ATTEMPTED SERVICE OF EDUARDO LOPEZ

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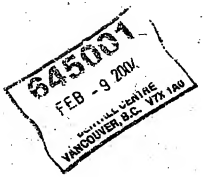
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DACCEL

DIGITAL ACCELERATOR CORP.

February 6, 2004

REGISTERED MAIL

Mr. Meng Wang
#306 – 7288 No. 3 Road
Richmond, BC
V6Y 3Y1

Dear Meng:

Re: Declaration for US Patent "Control Mechanisms for Enhanced Features for Streaming Video on Demand Systems

Please find enclosed a declaration that requires your signature and a copy of the Patent Application filed December 4, 2003.

Attempts have been made to contact you by telephone and email to no avail therefore we are trying to locate you at your last known address.

Please sign and have your signature witnessed, return to Digital Accelerator Corp. in the enclosed stamped self addressed enveloped.

We appreciate your prompt attention to this matter and look forward to receiving the documents as soon as possible.

Yours very truly,

DIGITAL ACCELERATOR CORP.

Peggie Jones

Encl.

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(0-05) 99-06-01

CONTROL MECHANISMS FOR ENHANCED FEATURES FOR STREAMING VIDEO ON DEMAND SYSTEMS

FIELD OF THE INVENTION

The present invention relates generally to systems for providing steamed video on demand to end users. More specifically the present invention relates to the provision of enhanced features to viewers of digital video on demand over Internet Protocol (IP) based networks.

BACKGROUND

Prior art streamed video on demand (SVOD) systems and an growing body of developing international standards exist for the provision of digital video content to end users. Current implementations of these systems are expensive, rely upon proprietary or inaccessible networks or cable systems and creating the net result of systems that do not provide the combination of attractive price, meaningful functionality and dependable delivery over existing networks. The present invention offers an inexpensive, scalable, modular and dependable system that brings meaningful and attractive features to end users.

BRIEF DESCRIPTION OF THE FIGURES

Table 1 sets out the technical specifications of the present invention.

Figure 1 illustrates the general structure of present invention.

Figure 2 is a block diagram of the general structure of present invention.

Figure 3 is a block diagram of movie production using the present invention.

Figure 4 is a block diagram of the user account module of the present invention.

Figure 5 is a block diagram of on-line intelligent retrieval of the present invention.

Figure 6.1 is a block diagram of the process of streaming movie content to clients in the present invention.

Figure 6.2 is a block diagram of the data communication between the media server an the client in the present invention.

Figure 7 is a block diagram of the movie playback and control mechanism of the present invention.

Figure 8 illustrates a streaming sequence in the present invention.

Figure 9 illustrates a streaming sequence in the present invention.

Figure 10 illustrates a streaming sequence in the present invention.

Figure 11 illustrates a coding strategy in the present invention.
Figure 12 illustrates a coding strategy in the present invention.
Figure 13 illustrates a coding strategy in the present invention.
Figure 14 illustrates a coding strategy in the present invention.
Figure 15 illustrates a streaming sequence in the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 illustrates the general structure of the present invention. Initially, the end user issues an HTTP GET command to the web server to start a Real Time Streaming Protocol (RTSP) session. The web server, after receiving and processing the connection request will send back to the end user a session description. If the web server agrees to establish the connection, it will start a client player, which will issue a SETUP request to the media server and a connection is established between the client player and the media server. As a result, data communication is ready and the user may choose to play/pause the media subsequently streamed from the media server. Simultaneously, the client player in the present invention may send back some Real-time Transport Control Protocol (RTCP) packets to give quality of service (QoS) feedback and support the synchronization of different media streams that exist in the preferred embodiment of the present invention. It will convey information such as the session participant and multicast-to-unicast translators. At the conclusion of the session or upon user request, the client player will close the connection by sending a TERADOWN command to the media server; the media server will then close the connection.

For the streaming control, the preferred embodiment of the present invention may use the Real Time Streaming Protocol (RTSP). Considering its popularity and quality, it is a good protocol to set up and control media delivery. For the actual data transfer, Internet Engineering Task Force (IETF) authored Real-time Transport Protocol (RTP) may be used. RTP is layered on top of TCP/IP or UDP and is effective for real-time data transmission.

For resources control, Resource ReserVation Protocol (RSVP) may be used to provide the QoS services to end users. When a client sends a request to the web server for a movie with some quality requirements, the server will decide if the resources for the requirements are available or not. If the resources are available, they will be reserved for media transmission from the server

to the client; otherwise, the server will notify the client that there are not enough resources to meet its requested requirements.

Figure 2 illustrates the overall flow chart of the streaming video on demand system of the present invention. The system is composed of five modules: movie production, intelligent movie retrieval, movie streaming, movie playback, and user account management processes.

Movie production is the process used to generate a movie database for playback and a feature database for movie retrieval. When new movies come, they will go through two processes. One is encoding process, where the movie content is encoded and converted to a bit-stream suitable for streaming. The other is a preprocessing step, where some semantic contents of the movie are extracted, such as keywords, movie category, scene change information, story units, important objects, and so on.

Another important module is the user account management, which consists of a user registration control and a user account information database. User registration provides an interface for new users to register and existing users to log on. User account information database saves all the user information, including credit card number, user account number, balance, and so on. This information is very important and must be secured against intrusion during both transmission and storage.

After movie encoding production, a movie database is available for customers to browse. However, if the database contains tens of thousands of movies, it is difficult to find a wanted movie. Therefore, a search engine is necessary for the efficiency of the system. The search can be based on movie title, movie features, and/or important objects. Movie title search is quite obvious and can be implemented easily. Movie feature search means searching the feature database to find movies with certain, fundamental features. The features may include color, texture, motion, shape, and so on. A third search criteria may be to find movies with certain important objects, such as featured performers, director or other criteria.

Once an end user selects a movie, the movie streaming and data communication module will be started. Streaming and data communication is a process to open a connection between the client and media server and send the compressed movie file to the client for playback. The file is in a format suitable for streaming. By using streaming, the client can start to play the movie after

buffering a certain number of frames, which is much more user friendly than downloading and playing.

The next module is responsible for playing and controlling the movie. Movie playback will be performed while streaming continues. At the same time, another thread will be maintained for the control information from the customer. The control information includes play/stop/pause, fast forward/backward, and exit.

When a user chooses a movie to watch, the web server should activate the corresponding player, which will communicate with the media server for the specific movie. Some configuration is required to enable the web server to recognize appropriate file extensions and call the corresponding player.

The media server is of key importance within the system and its responsibilities include setting up connections with clients, transmitting data, and closing the connections with clients.

All movie files saved in the media server are in streaming format. The data communication between client and media server will use RTSP for control and RTP for actual data transmission. SDKs from Real Network are available to convert files coded for the present invention into the standard streaming format. At the decoder side, the same SDKs can be used to convert the streaming data into a multiplexed bit stream.

Movie production is a procedure to create stream video files. The production process of the present invention includes a video coding and conversion process and a content extraction process. The first process encodes a raw movie and converts the encoded file into a format suitable for streaming. For video coding, the preferred embodiment of the present invention uses H.263+, for audio, MP3. The multiplexing scheme is from available MPEG standards. After encoding and multiplexing, the bit-stream is converted to a streaming format. The present invention may use some Real Producer SDKs to convert the bit-stream to a file in streaming format and the file is saved in a movie database.

The content extraction process starts with video segmentation, where the scene changes are detected and a long movie is cut into small pieces. Within each scene change, one or more key frames are extracted. Key frames can be organized to form a storyboard and can also be

clustered into units of semantic meaning, which correspond to some stories in a movie. Visual features of the key frames are computed, such as color, texture, and shape. The motion and object information within each scene change can also be computed. All this information will be saved in a movie feature database for movie database indexing and retrieval.

User account management module, as illustrated in Figure 4 is responsible for user registration and user account information management. User registration is realized via a Java interface, where the new users are required to provide some information and the existing users can just type in the user name and password. For a new user, the new account information needs to be entered and sent to the media server for confirmation. If the account information is ok, then an account name and password will be generated and sent to the user. Otherwise, the user will be asked to reenter the account information. If the user fails three times, the module will exit. For an existing user, a logon interface will appear for the user name and password. If the user name and password are ok, the user is allowed to browse the movie database and choose the movies to watch. Otherwise, the user is informed that the user name and/or password are not correct. The user can reenter the user name and password. If the user fails three times, the module will exit.

Figure 5 illustrates the flow chart of online intelligent retrieval module. This module displays the thumbnails of a selected set of movies. If a customer wants to search for a movie, several search criteria are available, such as movie title, keywords, important objects, feature-based search, and audio feature search. A feature database will be searched against the user-specified criteria and the thumbnails of the best matches in the movie database will be returned as the search result. The customer can then browse the thumbnails to get more detailed information or click them to playback a short clip. This module allows users to find a set of movies that they like in a short time.

Figure 6.1 shows the streaming process between the media server and client player. After video and audio coding, multiplexing is applied to generate a multiplexed bit-stream with timing information. Then the bit-stream is converted to the streaming format and sent to the client. When the client receives the bit-stream, it will convert it back to the multiplexed bit-stream, which will be de-multiplexed and sent to audio and video decoder for playback.

Figure 6.2 shows the data communication between the media server and client player. If the ...edia server does not receive a stop command, it will always check the incoming connection requests from the client players. When a new connection request comes in, the media server will check the available resources to see if it can handle this new request. If so, it will open a new connection and stream the requested movie to the client; otherwise, it will inform the client that the server is unable to process the request. After the movie is streamed to the client, the connection between the media server and the client will be closed so that the network bandwidth can be saved for other uses.

The movie playback and control module as illustrated in Figure 7. has two threads A and B. Thread A decodes the compressed movie and play it, and thread B accept the control information from the customers. The control information includes play, stop/pause, fast forward/backward, and exit command. Thread checks if the current playback mode is set to on or not. If it is on, then thread A will decode the current movie file and play back the movie; otherwise, it will do nothing. When the decoding and playback continue, some reconstructed P frames will be saved for fast backward function. After finish playback, the playback mode will be set to off. The right side of figure 7 shows the work of thread B, which accepts control information from the customers. When a play command is received, it will call play function of thread A and play the movie. When a stop command is received, the current movie will be stopped and the file pointer will be moved to the start of the movie. When a pause command is received, the current movie is paused at the current position. When a fast forward command is received, if the customer wants to fast forward to an I frame, then the information is available in the local disk. However, if the customer wants to fast forward to a P or B frame, then the client player needs to fetch one or two reconstructed frames from the media server. When a fast backward command is received, a reconstructed P frame or an I frame is obtained to start the decoding process. When an exit command is received, thread A and B are killed and client player exits.

Random frame search is the ability of a video player to relocate to a different frame from the current frame. Since the video frames are typically organized in a one-dimensional sequence, random frame search can be classified into fast forward (FF) and fast backward (or rewind REW).

If every frame in a video sequence is independently encoded (I-frame), then the player (decoder) would have no difficulty to jump to an arbitrary frame and resume the decoding and play from there. In a video sequence with all frames as I-frames, every frame can serve as a starting point of a new video sequence in FF and REW functions. However, due to its low compression, very few systems, such as MJPEG, use this scheme.

In MPEG family, predicted frames (P-frame) and bi-directional frames (B-frame) are used to achieve higher compression. Since the P-frames and B-frames are encoded with the information from some other frames in the video sequence, they can not be used as the starting point of a new video sequence in FF and REW functions.

MPEG family supports the FF and REW functions by inserting I-frames at fixed intervals in a video sequence. Upon a FF or REW request, the player will locate to the nearest I-frame prior to the desired frame and resume the playing from there. The following figure shows a typical MPEG video sequence, where the interval between a pair of I-frames is 16 frames:

I BBBPBBBPBBBPBBB I BBBPBBBPBBBPBBB I...

However, I-frames usually have lower compression ratio than P and B frames. MPEG family provides a tradeoff between the compression performance and VCR functionality.

The new method, the DRFS, is realized by keeping two sequences for a given video archive on the media server. One sequence, called streaming sequence, provides the data for normal transmission purpose. Another sequence, the index sequence, provides the data for realizing FF and REW functions.

The streaming sequence starts with an I-frame, and contains I-frames only at places where scene changes occur. This is shown in Figure 8:

The index sequence contains search frames (S-frame) to support the FF and REW functions, as shown in Figure 9. The interval between a pair of S-frames can be variable, and is determined by the requirement of the accuracy of random search.

During the encoding process, the streaming sequence is coded as the primary sequence, and the index sequence is derived from the streaming sequence. An S-frame in the index sequence can be derived either from an I-frame or from a P-frame of the streaming sequence, but not from a B-frame. This is illustrated in Figure 10.

The process of deriving an S-frame from an I-frame is trivial as illustrated in Figure 11. The present invention simply copies the compressed I-frame data into the buffer of the S-frame.

The following diagram shows how an S-frame is derived from a P-frame. Firstly, the reconstructed form of this P-frame is needed, and it can be acquired from the feedback loop of the normal P-frame encoding routine. Secondly, an I-frame encoding routine is called to encode this same frame as an I-frame, and one must keep both its compressed form and its reconstructed form.

Then, the difference between the reconstructed P-frame and the reconstructed I-frame is calculated. This difference is encoded through a lossless process. The lossless-encoded difference, together with the compressed I-frame data, forms the complete set of data of the S-frame.

Similar to the encoding process, the decoder needs to derive an index sequence while decoding the streaming sequence. Same as the encoding process, an S-frame in the index sequence can be derived either from an I-frame or from a P-frame of the streaming sequence, but not from a B-frame. Notice that in theory, the decoder does not necessarily need to produce the S-frames at the same locations in the sequence as the encoding process.

Figure 13 shows the derivation of an S-frame from I-frame in decoding while Figure 14 illustrates the derivation of an S-frame from a P-frame.

Notice that the S-frame derived from an I-frame is saved in compressed form, whereas the S-frame derived from a P-frame is saved in reconstructed form. Since the reconstructed form requires much larger storage space than the compressed form does, this system uses two approaches to save the space required by P-frame derived S-frames: (1) use a lossless compression step to save the reconstructed S-frames, which can in average reduce the required space by 50%. (2) Produce a sparser index sequence than the encoding process.

...n streaming process, the encoded streaming sequence stored on the media server is transmitted to the client player.

The client player decodes the received streaming sequence, and at the same time produces an index sequence and stores it in a local storage associated with the player.

Figure 15 illustrates the method by which the FF and REW functions are achieved with the DRFS technology. Suppose the decoding process is currently at the place of 'Current Frame'. Because this is a streaming application, the current frame is placed somewhere within the buffered data range. In general, this situation defines two searching zones for random frame access. The Valid REW Zone starts with the first frame and ends at the current frame, and the Valid FF zone is from the current frame to the front end of the buffered data range. In practice, the present invention defines a Dean Zone at the front end of the buffered data range for the sake of smooth play after the FF search operation.

When the client player receives a user request for FF operation, it first checks to see if the wanted frame is within the valid FF zone. If yes, the wanted frame number is sent to the media server. The server will locate the S-frame that is nearest to the wanted frame and send the data of this S-frame (compressed) to the client. Once this data is received, the player decodes this S-frame and plays it. The playing process will continue with the data in the buffer.

When a REW request is received by the player, it will first check the local index sequence to see if a 'close-enough' S-frame can be found. If yes the nearest S-frame will be used to resume the video sequence. If no, a request is issued to the server to download an S-frame that is nearest to the wanted frame.

In both FF and REW operations, the downloaded S-frame is stored in client's local storage after it is used to resume a new video sequence.

This random search technique is referred to as being 'distributed' because both the server and the client provide partial data for the index sequence. Given a specific FF or REW request, the wanted S-frame could be found either in the local index sequence or in the server's index sequence. At the end of the play process, the user will have a complete set of S-frames for later

review purposes. Therefore, when the viewer watch the same video content for the second time, all FF and REW functions will be available locally.

A storyboard is a short – usually 2 or 3 minute -- summary of a movie, which shows the important pictures of a feature length movie. People usually want to get a general idea of a movie before ordering. The SVOD system allows the viewers to preview the storyboard of a movie to decide whether to order it or not. Another advantage of the storyboard is to allow viewers to fast forward/backward by storyboard unit instead of frame by frame. Moreover, some indexing can be utilized based on the storyboard and intelligent retrieval of movies can be realized.

The generation of a storyboard involves three steps. First of all, some scene change techniques are applied to segment a long movie into shorter video clips. After that, key frames are chosen from each video clip based on some low or medium level information, such as color, texture, or important objects in the scene. Later on, some higher-level semantic analysis can be applied to the segmented clips to group them into meaningful story units. When a customer wants to get a general idea of a certain movie, he can quickly browse the story units and if he is interested, he can dig into details by looking at key frames and each video clips.

Scalability is a very desirable option in streaming video application. The current streaming systems allow temporal scalability by dropping frames, and cut the wavelet bit-stream at a certain point to achieve spatial scalability. The present invention offers another scalability mode, which is called SNR and spatial scalability. This kind of scalability is very suitable for streaming video, since the videos are coded in base layer and enhancement layers. The server can decide to send different layers to different clients. If a client requires high quality videos, the server will send base layer stream and enhancement layer streams. Otherwise, when a client only wants medium quality videos, the server will just send the base layer to it. The video player is also able to decode scalable bit-stream according to the network traffic. Normally, the video player should display the video stream that the client asks for. However, when the network is really busy and the transmission speed is very slow, the client should notify the upstream server to only send the base layer bit-stream to relieve the network load.

After processing of the movie clips, scene change information and key frames are available, which can be used to popularize the movie database. Keywords, as well as visual content of key

frames, can be used as indices to search for the movies of interest. Keywords can be assigned to ...ovie clips by computer processing with human interaction. For example, the movies can be categorized into comedy, horror, scientific, history, music movies, and so on. The visual content of key frames, such as color, texture, and objects, should be extracted by automatic computer processing. Color and texture are relatively easy to deal with and the difficult task is how to extract objects from the natural scene. At present, the population process can be automatic or semi-automatic, where human operator may interfere.

After popularization, another embodiment of the present invention may allow customers to search for the movies they would like to watch. For example, they can specify the kind of movies, such as comedy, horror, or scientific movies. They can also choose to see a movie with certain characters they like, and so on. Basically, the intelligent retrieval capability allows them to find the movies they like in a much shorter time, which is very important for the customers.

Multicasting is an important feature of streaming video. It allows multiple users to share the limited network bandwidth. There are some scenarios that multicasting can be used with another embodiment of the present invention. The first case is a broadcasting program, where the same content is sent out at the same time to multiple customers. The second case is a pre-chosen program, where multiple customers may choose to watch the same program around the same time. The third case is when multiple customers order movies on demand, some of them happen to order the same movie around the same time. The last case may not happen frequently and another embodiment of the present invention shall focus on the first cases for the multicasting utilization. Basically, multicasting allows us to send one copy of encoded movie to a group of customers instead of sending one copy to each of them. It can greatly increase the server capability and make full use of network bandwidth.

Due to the combination of the present invention's DRFS technology and proprietary video compression performance, very high compression ratio can be achieved for high-quality content delivery. The following table gives an estimation of compression performance. (The estimation is based on frame size of 320x240 at 30 frames/sec.)

100-min Movie (Raw Data Size)	DVD quality (20:1)		VCD quality (40:1)		DAC quality (80:1)	
	Data Size	Downloa d Time	Data Size	Downloa d Time	Data Size	Downlo ad Time
19775 M	989 M	3956 Sec	495 M	1980 Sec	248 M	992 Sec

Note: 2Mbps channel bandwidth is assumed.

Bandwidth (Client)	Server Capability	Presentation Delay	Server Network	Transfer Control Protocol	Transfer Protocol
1.5Mbps	1.5Gbps	6 Minutes	Fiber/ATM	RTSP	RTP

Fast Forward/ Backward	Pause/ Stop/ Play	Storyboard	Scalability	Intelligent Movie Retrieval	High quality, smooth playback	Multicasting
Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 1. System Specifications

100-min Movie (Raw Data Size)	DVD quality (20:1)		VCD quality (40:1)		DAC quality (80:1)	
	Data Size	Download Time	Data Size	Download Time	Data Size	Download Time
19775 M	989 M	3956 Sec	495 M	1980 Sec	248 M	992 Sec

Table 2.

THE EMBODIMENTS OF THE PRESENT INVENTION IN WHICH AN EXCLUSIVE ROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method for providing enhanced features for streamed video content over a network comprising the steps of:

a) initializing a web server and a media server

b) providing a client player to the end user;

c) opening the streaming session;

d) streaming the coded video content bit steam between the media server and client player;

e) enabling the enhanced feature set to the end user for manipulation through the client player;

f) terminating the streaming session.

2. The method as defined in claim 1, wherein the video content has been encoded for compression using prior art H263 standards.

3. The method as defined in claim 1, wherein the audio content has been encoded for compression using prior art MP3 standards.

4. The method as defined in claim 1, wherein the video content has been pre-encoded deriving semantic content from the video to construct a searchable index of content features.

5. An apparatus for providing enhanced features for streamed video content over a network comprised of:

a web server and a media server.

a client player offering an enhanced feature set to the end user;

means of initiating and maintaining and terminating a streaming session between the media server and client player.

6. The apparatus as defined in claim 1, wherein the video content has been encoded for compression using prior art H263 standards.

7. The apparatus as defined in claim 1, wherein the audio content has been encoded for compression using prior art MP3 standards.

o. The apparatus as defined in claim 1, wherein the video content has been pre-encoded deriving semantic content from the video to construct a searchable index of content features.

ABSTRACT

The present invention discloses a method and system for the provision of enhanced features in streamed video on demand (SVOD) over a network.

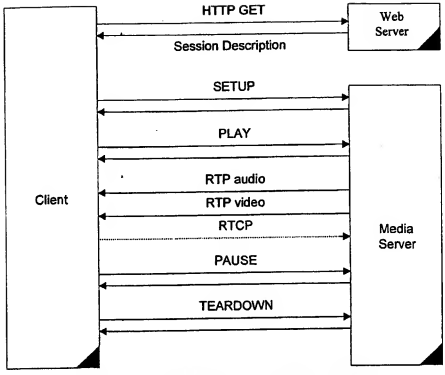

Figure 1. System structure of SVOD system

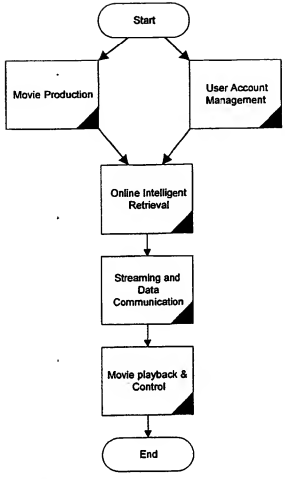

Figure 2. Flow chart of SVOD system

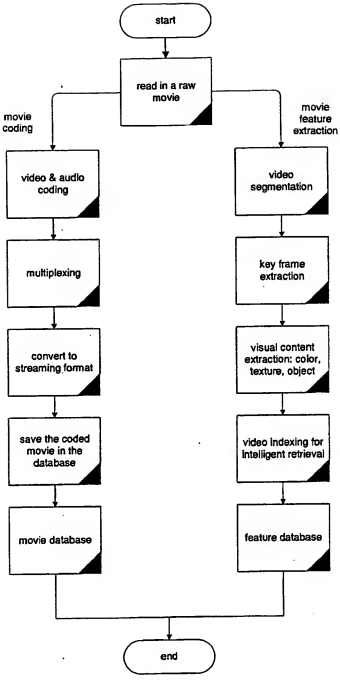

Figure 3. Movie Production

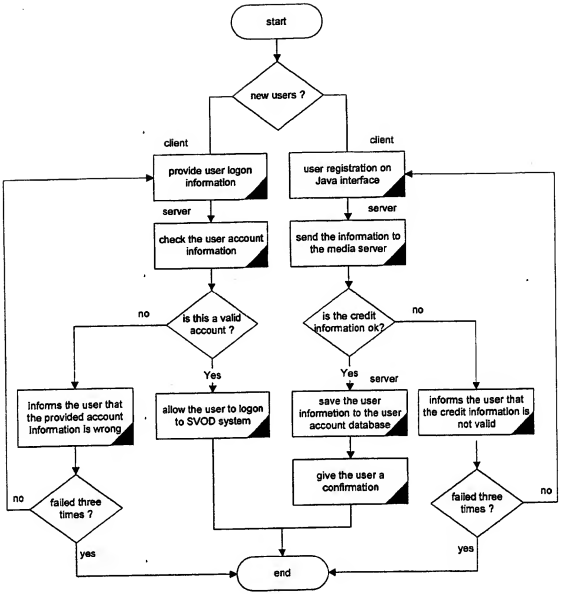

Figure 4. User account management

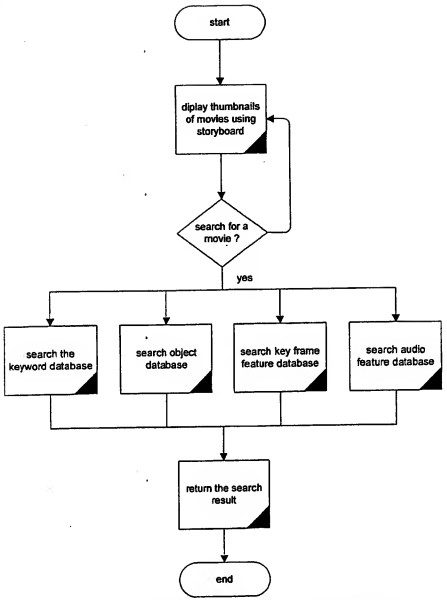

Figure 5. Online intelligent retrieval

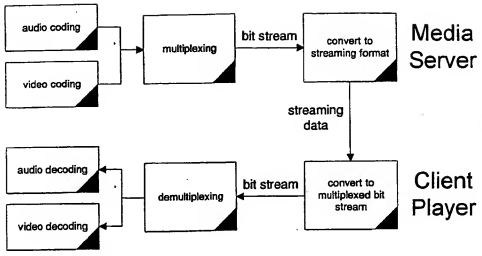

Figure 6.1 Streaming of movies from media server to client

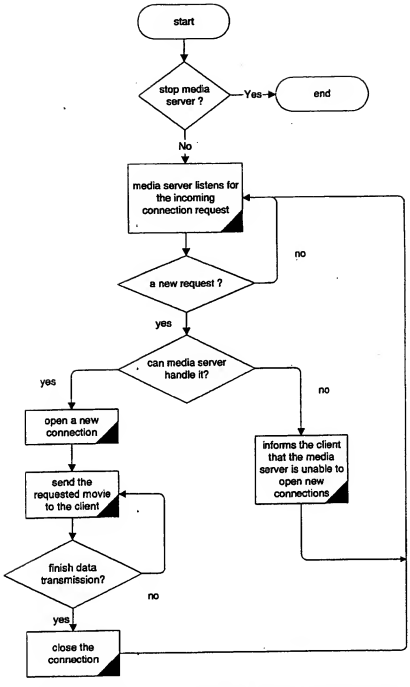

Figure 6.2 Data communication between media server and client player

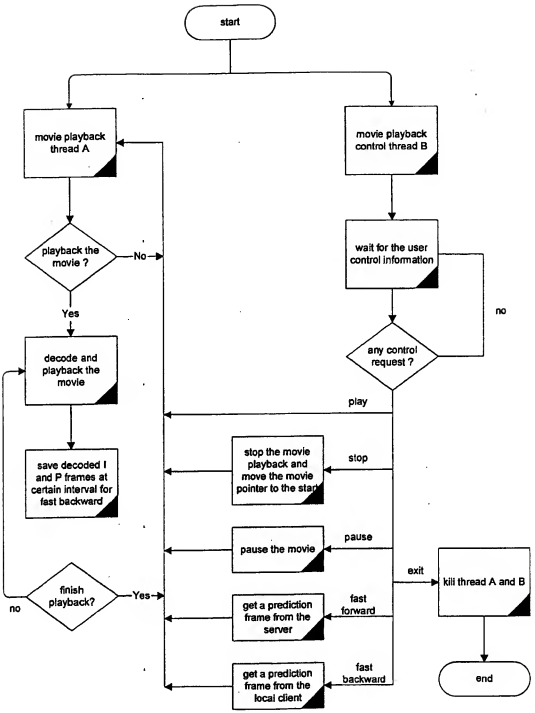

Figure 7. Movie playback and control

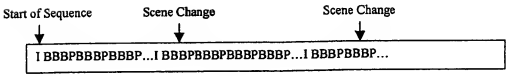

Figure 8.

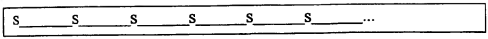

Figure 9.

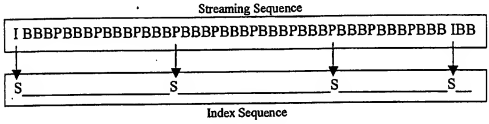

Figure 10.

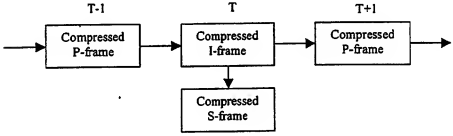

Figure 11.

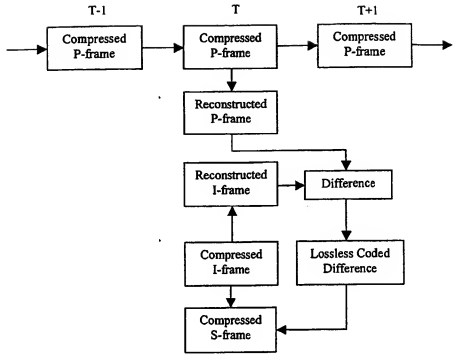

Figure 12.

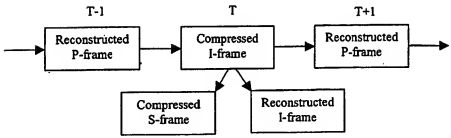

Figure 13.

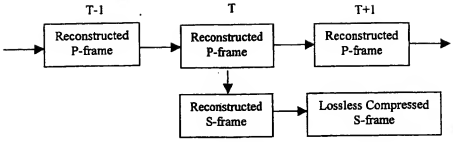

Figure 14.

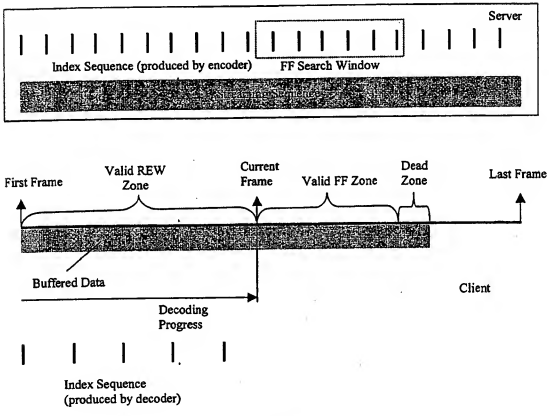

Figure 15.

IN THE UNITED STATES OF AMERICA
PATENT AND TRADEMARK OFFICE

APPLICANTS: MENG WANG
JIAN WANG
YING LUO
IGNATIUS CHING

TITLE: CONTROL MECHANISMS FOR ENHANCED FEATURES FOR STREAMING VIDEO ON DEMAND SYSTEMS

DOCKET NO.: 17557-0

BOX PATENT APPLICATION
COMMISSIONER FOR PATENTS
P. O. BOX 1450
ALEXANDRIA, VA 22313-1450

COMBINED DECLARATION AND POWER OF ATTORNEY (ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL, CONTINUATION, OR C-I-P)

As below named inventors, we hereby declare that:

TYPE OF DECLARATION

This declaration is of the following type:

(Check one applicable item below)

[X] original.
[ ] design.
[ ] supplemental.
[ ] national stage of PCT.
[ ] divisional.
[ ] continuation.
[ ] continuation-in-part (C-I-P).

INVENTORSHIP IDENTIFICATION

Our residence, post office address and citizenship are as stated below, next to our names. We believe that we are the original, first, joint, and sole inventors of

the subject matter that is claimed, and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

CONTROL MECHANISMS FOR ENHANCED FEATURES
FOR STREAMING VIDEO ON DEMAND SYSTEMS

SPECIFICATION IDENTIFICATION

the specification of which:

(complete (a), (b) or (c))

(a) [ ] is attached hereto.

(b) [X] was filed on December 4, 2003, as [X] Serial No. 10/727,857 or [ ] _____ and was amended on _____ (if applicable).

(c) [ ] was described and claimed in PCT International Application No. _____, filed on _____ and as amended under PCT Article 19 on _____ (if any).

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

We hereby state that we have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. We acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56,

(also check the following items, if desired)

[X] and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and

[ ] in compliance with this duty, there is attached an information disclosure statement, in accordance with 37 CFR 1.98.

PRIORITY CLAIM (35 U.S.C. § 119(a)-(d))

We hereby claim foreign priority benefits under Title 35, United States code, § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

(complete (d) or (e))

(d) [X] no such applications have been filed.
(e) [ ] such applications have been filed as follows.

POWER OF ATTORNEY

We hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

RUSSEL O. PRIMEAUX, PTO REG. NUMBER 37,213;
HENRY E. NAYLOR, PTO REG. NUMBER 27,461; and
WILLIAM R. COENEN, III, PTO REG. NUMBER 48,239.

[ ] Attached, as part of this declaration and power of attorney, is the authorization of the above-named attorney(s) to accept and follow instructions from my representative(s).

SEND CORRESPONDENCE AND DIRECT TELEPHONE CALLS TO:

William R. Coenen, III
KEAN, MILLER, HAWTHORNE, D'ARMOND, MCCOWAN
& JARMAN, L.L.P.
Post Office Box 3513
Baton Rouge, Louisiana 70821
Telephone: 225-389-3733
Fax: 225-388-9133

DECLARATION

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)

Full name of first joint inventor

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Vancouver, British
Columbia V5Z 3T6
Canada

Full name of second joint inventor

Jian Wang

Date: _____

Country of Citizenship: Canada

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Burnaby, British
Columbia V6H 2P6
Canada

Full name of third joint inventor

Ying Luo

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Country of Citizenship: Canada
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Canada

Full name of fourth joint inventor

Ignatius Cheng

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Columbia V5J 2N8
Canada

(if no further pages form a part of this Declaration,
then end this Declaration with this page
and check the following item)

[X] This declaration ends with this page.

1255 WEST PENDER
VANCOUVER, BC
CANADA V6E 2V1
TEL: 604-689-1858
FAX: 604-689-1758
www.dacce1.com

DACCEL

DIGITAL ACCELERATOR CORP.

MEMORANDUM

To: Susan Chao
MBM & Co.

Cc:

From: Peggie Jones

Date: January 9, 2004

Re: **Assignment of Invention – Jian Wang**

Every effort has been taken to locate the above past employee. The following is what has been done to date:

- December 12, 2003 - all of the Science employees were asked if they were aware of his where abouts - nobody has any idea
- December 17, 2003 – an email was sent to hellovou2000us@yahoo.com – this address was in his employee file.. – Failure Delivery Notice was received (copy attached)
- December 18, 2003 – sent email to jwangc@sc.sfu.ca – this address was used for the initial correspondence in December 1998 – Undelivered Mail Returned to Sender was received (copy attached)
- December 19, 2003 – called 604-438-6568 – last known number – No Service
- December 19, 2003 – called directory assistance but the list of Wang's is to long to even begin a search.

Please let me know if you require anything further on this matter.

Peggie

ALL-STATE LEGAL®
EXHIBIT
1

Peggie Jones

From: MAILER-DAEMON@yahoo.com
Sent: Wednesday, December 17, 2003 11:03 AM
To: pjones@daccel.com
Subject: failure delivery

Message from yahoo.com.
Unable to deliver message to the following address(es).

<helloyou2000us@yahoo.com>:
size saved = 540
connect timeout: Operation now in progress
connect timeout: Operation now in progress
Can't open mailbox for helloyou2000us@yahoo.com. Temporary error
/I'm not going to try again; this message has been in the queue too long.

--- Original message follows.

Return-Path: <pjones@daccel.com>
X-Rocket-Track: 1: 100 ; SERVER=66.218.86.251
Return-Path: <pjones@daccel.com>
Received: from 216.251.140.71 (EHLO smtp.daccel.com) (216.251.140.71)
by mta138.mail.scd.yahoo.com with SMTP; Tue, 16 Dec 2003 09:52:43 -0800
Received: from adm005 (unknown [10.10.1.126])
by smtp.daccel.com (Postfix) with SMTP id E26DA1462E
for <helloyou2000us@yahoo.com>; Tue, 16 Dec 2003 12:54:01 -0500 (EST)
From: "Peggie Jones" <pjones@daccel.com>
To: <helloyou2000us@yahoo.com>
Subject: Patent Assignment
Date: Tue, 16 Dec 2003 09:56:46 -0800
Message-ID: <KAEEIICDOKMJDKBHDBOIGEJHCDAA.pjones@daccel.com>
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit
X-Priority: 3 (Normal)
X-MSMail-Priority: Normal
X-Mailer: Microsoft Outlook IMO, Build 9.0.2416 (9.0.2910.0)
X-MimeOLE: Produced By Microsoft MimeOLE V6.00.2800.1165
Importance: Normal

Hi Jian:

I sure hope this reaches you. DAC is still here and I have a patent assignment that requires your signature.

Please get back to me ASAP and let me know if I could fax this to you so that we can get a signed document quickly.

I appreciate your help and quick response to my request.

Thanks again,

Peggie Jones
Digital Accelerator Corporation
1255 West Pender Street
Vancouver, BC V6E 2V1

Phone: 604-689-1858
Fax: 604-689-1758
email: pjones@daccel.com <mailto:pjones@daccel.com>

Peggie Jones

From: Mail Delivery System [MAILER-DAEMON@daccel.com]
Sent: Thursday, December 18, 2003 8:34 AM
To: pjones@daccel.com
Subject: Undelivered Mail Returned to Sender

Delivery error report.dat

Patent Assignment (881 bytes)

```
                    This is the Postfix program at host smtp.daccel.com.

I'm sorry to have to inform you that the message returned
below could not be delivered to one or more destinations.

For further assistance, please send mail to <postmaster>

If you do so, please include this problem report. You can
delete your own text from the message returned below.

                    The Postfix program

<jwangc@sc.sfu.ca>: Name service error for sc.sfu.ca: Host not found
```

Digital Accelerator Corp.
1255 West Pender Street
Vancouver, BC V6E 2V1

Moved US 34

CANADA POST
POST CANA
Paid 2004.02.05 Postage — Pr
Vancouver BC V7R1R8 0.194 K
Canada 7.60
6031100 | 966926 | 06

Registered Recommandé

CANADA POSTES POST CANADA

RT 811 773 538 CA RT 811 773 538 CA
RT 811 773 538 CA
RT 811 773 538 CA

Signature Required
Signature requise

Sender warrants that this shipment does not contain dangerous goods.
L'expéditeur garantit que cet envoi ne contient pas de matières dangereuses.

79

RETURN TO SENDER
RENVOI À L'EXPÉDITEUR
Unclaimed
Refused
Moved
Not at this address
Inconnu à cette adresse
Not known
Refusé par le destinataire
Insufficient address
Deceased
Unknown

Mr. Jian Wang
Apt. 209, 5900 Olive Avenue
Burnaby, BC
V5H 2P6

ALL-STATE LEGAL

EXHIBIT
J

645001
FEB - 9 2004
VANCOUVER, B.C. V7X 1A0

1255 WEST PENDER
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CANADA V6E 2V1
TEL: 604-689-1852
FAX: 604-689-1758
www.dacc.ca

DIGITAL ACCELERATOR CORP.

February 6, 2004

REGISTERED MAIL

Mr. Jian Wang
Apt. 209, 5900 Olive Avenue
Burnaby, BC
V5H 2P6

Dear Jian:

Re: Declaration for US Patent "Control Mechanisms for Enhanced Features for Streaming Video on Demand Systems

Please find enclosed a declaration that requires your signature and a copy of the Patent Application filed December 4, 2003.

Attempts have been made to contact you by telephone and email to no avail therefore we are trying to locate you at your last known address.

Please sign and have your signature witnessed, return to Digital Accelerator Corp. in the enclosed stamped self addressed enveloped.

We appreciate your prompt attention to this matter and look forward to receiving the documents as soon as possible.

Yours very truly,

DIGITAL ACCELERATOR CORP.

Peggie Jones

Encl.

CONTROL MECHANISMS FOR ENHANCED FEATURES FOR STREAMING VIDEO ON DEMAND SYSTEMS

FIELD OF THE INVENTION

The present invention relates generally to systems for providing steamed video on demand to end users. More specifically the present invention relates to the provision of enhanced features to viewers of digital video on demand over Internet Protocol (IP) based networks.

BACKGROUND

Prior art streamed video on demand (SVOD) systems and an growing body of developing international standards exist for the provision of digital video content to end users. Current implementations of these systems are expensive, rely upon proprietary or inaccessible networks or cable systems and creating the net result of systems that do not provide the combination of attractive price, meaningful functionality and dependable delivery over existing networks. The present invention offers an inexpensive, scalable, modular and dependable system that brings meaningful and attractive features to end users.

BRIEF DESCRIPTION OF THE FIGURES

Table 1 sets out the technical specifications of the present invention.

Figure 1 illustrates the general structure of present invention.

Figure 2 is a block diagram of the general structure of present invention.

Figure 3 is a block diagram of movie production using the present invention.

Figure 4 is a block diagram of the user account module of the present invention.

Figure 5 is a block diagram of on-line intelligent retrieval of the present invention.

Figure 6.1 is a block diagram of the process of streaming movie content to clients in the present invention.

Figure 6.2 is a block diagram of the data communication between the media server an the client in the present invention.

Figure 7 is a block diagram of the movie playback and control mechanism of the present invention.

Figure 8 illustrates a streaming sequence in the present invention.

Figure 9 illustrates a streaming sequence in the present invention.

Figure 10 illustrates a streaming sequence in the present invention.

Figure 11 illustrates a coding strategy in the present invention.
Figure 12 illustrates a coding strategy in the present invention.
Figure 13 illustrates a coding strategy in the present invention.
Figure 14 illustrates a coding strategy in the present invention.
Figure 15 illustrates a streaming sequence in the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 illustrates the general structure of the present invention. Initially, the end user issues an HTTP GET command to the web server to start a Real Time Streaming Protocol (RTSP) session. The web server, after receiving and processing the connection request will send back to the end user a session description. If the web server agrees to establish the connection, it will start a client player, which will issue a SETUP request to the media server and a connection is established between the client player and the media server. As a result, data communication is ready and the user may choose to play/pause the media subsequently streamed from the media server. Simultaneously, the client player in the present invention may send back some Real-time Transport Control Protocol (RTCP) packets to give quality of service (QoS) feedback and support the synchronization of different media streams that exist in the preferred embodiment of the present invention. It will convey information such as the session participant and multicast-to-unicast translators. At the conclusion of the session or upon user request, the client player will close the connection by sending a TERADOWN command to the media server; the media server will then close the connection.

For the streaming control, the preferred embodiment of the present invention may use the Real Time Streaming Protocol (RTSP). Considering its popularity and quality, it is a good protocol to set up and control media delivery. For the actual data transfer, Internet Engineering Task Force (IETF) authored Real-time Transport Protocol (RTP) may be used. RTP is layered on top of TCP/IP or UDP and is effective for real-time data transmission.

For resources control, Resource ReserVation Protocol (RSVP) may be used to provide the QoS services to end users. When a client sends a request to the web server for a movie with some quality requirements, the server will decide if the resources for the requirements are available or not. If the resources are available, they will be reserved for media transmission from the server

to the client; otherwise, the server will notify the client that there are not enough resources to meet its requested requirements.

Figure 2 illustrates the overall flow chart of the streaming video on demand system of the present invention. The system is composed of five modules: movie production, intelligent movie retrieval, movie streaming, movie playback, and user account management processes.

Movie production is the process used to generate a movie database for playback and a feature database for movie retrieval. When new movies come, they will go through two processes. One is encoding process, where the movie content is encoded and converted to a bit-stream suitable for streaming. The other is a preprocessing step, where some semantic contents of the movie are extracted, such as keywords, movie category, scene change information, story units, important objects, and so on.

Another important module is the user account management, which consists of a user registration control and a user account information database. User registration provides an interface for new users to register and existing users to log on. User account information database saves all the user information, including credit card number, user account number, balance, and so on. This information is very important and must be secured against intrusion during both transmission and storage.

After movie encoding production, a movie database is available for customers to browse. However, if the database contains tens of thousands of movies, it is difficult to find a wanted movie. Therefore, a search engine is necessary for the efficiency of the system. The search can be based on movie title, movie features, and/or important objects. Movie title search is quite obvious and can be implemented easily. Movie feature search means searching the feature database to find movies with certain, fundamental features. The features may include color, texture, motion, shape, and so on. A third search criteria may be to find movies with certain important objects, such as featured performers, director or other criteria.

Once an end user selects a movie, the movie streaming and data communication module will be started. Streaming and data communication is a process to open a connection between the client and media server and send the compressed movie file to the client for playback. The file is in a format suitable for streaming. By using streaming, the client can start to play the movie after

buffering a certain number of frames, which is much more user friendly than downloading and playing.

The next module is responsible for playing and controlling the movie. Movie playback will be performed while streaming continues. At the same time, another thread will be maintained for the control information from the customer. The control information includes play/stop/pause, fast forward/backward, and exit.

When a user chooses a movie to watch, the web server should activate the corresponding player, which will communicate with the media server for the specific movie. Some configuration is required to enable the web server to recognize appropriate file extensions and call the corresponding player.

The media server is of key importance within the system and its responsibilities include setting up connections with clients, transmitting data, and closing the connections with clients.

All movie files saved in the media server are in streaming format. The data communication between client and media server will use RTSP for control and RTP for actual data transmission. SDKs from Real Network are available to convert files coded for the present invention into the standard streaming format. At the decoder side, the same SDKs can be used to convert the streaming data into a multiplexed bit stream.

Movie production is a procedure to create stream video files. The production process of the present invention includes a video coding and conversion process and a content extraction process. The first process encodes a raw movie and converts the encoded file into a format suitable for streaming. For video coding, the preferred embodiment of the present invention uses H.263+, for audio, MP3. The multiplexing scheme is from available MPEG standards. After encoding and multiplexing, the bit-stream is converted to a streaming format. The present invention may use some Real Producer SDKs to convert the bit-stream to a file in streaming format and the file is saved in a movie database.

The content extraction process starts with video segmentation, where the scene changes are detected and a long movie is cut into small pieces. Within each scene change, one or more key frames are extracted. Key frames can be organized to form a storyboard and can also be

clustered into units of semantic meaning, which correspond to some stories in a movie. Visual features of the key frames are computed, such as color, texture, and shape. The motion and object information within each scene change can also be computed. All this information will be saved in a movie feature database for movie database indexing and retrieval.

User account management module, as illustrated in Figure 4 is responsible for user registration and user account information management. User registration is realized via a Java interface, where the new users are required to provide some information and the existing users can just type in the user name and password. For a new user, the new account information needs to be entered and sent to the media server for confirmation. If the account information is ok, then an account name and password will be generated and sent to the user. Otherwise, the user will be asked to reenter the account information. If the user fails three times, the module will exit. For an existing user, a logon interface will appear for the user name and password. If the user name and password are ok, the user is allowed to browse the movie database and choose the movies to watch. Otherwise, the user is informed that the user name and/or password are not correct. The user can reenter the user name and password. If the user fails three times, the module will exit.

Figure 5 illustrates the flow chart of online intelligent retrieval module. This module displays the thumbnails of a selected set of movies. If a customer wants to search for a movie, several search criteria are available, such as movie title, keywords, important objects, feature-based search, and audio feature search. A feature database will be searched against the user-specified criteria and the thumbnails of the best matches in the movie database will be returned as the search result. The customer can then browse the thumbnails to get more detailed information or click them to playback a short clip. This module allows users to find a set of movies that they like in a short time.

Figure 6.1 shows the streaming process between the media server and client player. After video and audio coding, multiplexing is applied to generate a multiplexed bit-stream with timing information. Then the bit-stream is converted to the streaming format and sent to the client. When the client receives the bit-stream, it will convert it back to the multiplexed bit-stream, which will be de-multiplexed and sent to audio and video decoder for playback.

Figure 6.2 shows the data communication between the media server and client player. If the ...edia server does not receive a stop command, it will always check the incoming connection requests from the client players. When a new connection request comes in, the media server will check the available resources to see if it can handle this new request. If so, it will open a new connection and stream the requested movie to the client; otherwise, it will inform the client that the server is unable to process the request. After the movie is streamed to the client, the connection between the media server and the client will be closed so that the network bandwidth can be saved for other uses.

The movie playback and control module as illustrated in Figure 7. has two threads A and B. Thread A decodes the compressed movie and play it, and thread B accept the control information from the customers. The control information includes play, stop/pause, fast forward/backward, and exit command. Thread checks if the current playback mode is set to on or not. If it is on, then thread A will decode the current movie file and play back the movie; otherwise, it will do nothing. When the decoding and playback continue, some reconstructed P frames will be saved for fast backward function. After finish playback, the playback mode will be set to off. The right side of figure 7 shows the work of thread B, which accepts control information from the customers. When a play command is received, it will call play function of thread A and play the movie. When a stop command is received, the current movie will be stopped and the file pointer will be moved to the start of the movie. When a pause command is received, the current movie is paused at the current position. When a fast forward command is received, if the customer wants to fast forward to an I frame, then the information is available in the local disk. However, if the customer wants to fast forward to a P or B frame, then the client player needs to fetch one or two reconstructed frames from the media server. When a fast backward command is received, a reconstructed P frame or an I frame is obtained to start the decoding process. When an exit command is received, thread A and B are killed and client player exits.

Random frame search is the ability of a video player to relocate to a different frame from the current frame. Since the video frames are typically organized in a one-dimensional sequence, random frame search can be classified into fast forward (FF) and fast backward (or rewind REW).

If every frame in a video sequence is independently encoded (I-frame), then the player (decoder) would have no difficulty to jump to an arbitrary frame and resume the decoding and play from there. In a video sequence with all frames as I-frames, every frame can serve as a starting point of a new video sequence in FF and REW functions. However, due to its low compression, very few systems, such as MJPEG, use this scheme.

In MPEG family, predicted frames (P-frame) and bi-directional frames (B-frame) are used to achieve higher compression. Since the P-frames and B-frames are encoded with the information from some other frames in the video sequence, they can not be used as the starting point of a new video sequence in FF and REW functions.

MPEG family supports the FF and REW functions by inserting I-frames at fixed intervals in a video sequence. Upon a FF or REW request, the player will locate to the nearest I-frame prior to the desired frame and resume the playing from there. The following figure shows a typical MPEG video sequence, where the interval between a pair of I-frames is 16 frames:

I BBBPBBBPBBBPBBB I BBBPBBBPBBBPBBB I...

However, I-frames usually have lower compression ratio than P and B frames. MPEG family provides a tradeoff between the compression performance and VCR functionality.

The new method, the DRFS, is realized by keeping two sequences for a given video archive on the media server. One sequence, called streaming sequence, provides the data for normal transmission purpose. Another sequence, the index sequence, provides the data for realizing FF and REW functions.

The streaming sequence starts with an I-frame, and contains I-frames only at places where scene changes occur. This is shown in Figure 8:

The index sequence contains search frames (S-frame) to support the FF and REW functions, as shown in Figure 9. The interval between a pair of S-frames can be variable, and is determined by the requirement of the accuracy of random search.

During the encoding process, the streaming sequence is coded as the primary sequence, and the index sequence is derived from the streaming sequence. An S-frame in the index sequence can be derived either from an I-frame or from a P-frame of the streaming sequence, but not from a B-frame. This is illustrated in Figure 10.

The process of deriving an S-frame from an I-frame is trivial as illustrated in Figure 11. The present invention simply copies the compressed I-frame data into the buffer of the S-frame.

The following diagram shows how an S-frame is derived from a P-frame. Firstly, the reconstructed form of this P-frame is needed, and it can be acquired from the feedback loop of the normal P-frame encoding routine. Secondly, an I-frame encoding routine is called to encode this same frame as an I-frame, and one must keep both its compressed form and its reconstructed form.

Then, the difference between the reconstructed P-frame and the reconstructed I-frame is calculated. This difference is encoded through a lossless process. The lossless-encoded difference, together with the compressed I-frame data, forms the complete set of data of the S-frame.

Similar to the encoding process, the decoder needs to derive an index sequence while decoding the streaming sequence. Same as the encoding process, an S-frame in the index sequence can be derived either from an I-frame or from a P-frame of the streaming sequence, but not from a B-frame. Notice that in theory, the decoder does not necessarily need to produce the S-frames at the same locations in the sequence as the encoding process.

Figure 13 shows the derivation of an S-frame from I-frame in decoding while Figure 14 illustrates the derivation of an S-frame from a P-frame.

Notice that the S-frame derived from an I-frame is saved in compressed form, whereas the S-frame derived from a P-frame is saved in reconstructed form. Since the reconstructed form requires much larger storage space than the compressed form does, this system uses two approaches to save the space required by P-frame derived S-frames: (1) use a lossless compression step to save the reconstructed S-frames, which can in average reduce the required space by 50%. (2) Produce a sparser index sequence than the encoding process.

...n streaming process, the encoded streaming sequence stored on the media server is transmitted to the client player.

The client player decodes the received streaming sequence, and at the same time produces an index sequence and stores it in a local storage associated with the player.

Figure 15 illustrates the method by which the FF and REW functions are achieved with the DRFS technology. Suppose the decoding process is currently at the place of 'Current Frame'. Because this is a streaming application, the current frame is placed somewhere within the buffered data range. In general, this situation defines two searching zones for random frame access. The Valid REW Zone starts with the first frame and ends at the current frame, and the Valid FF zone is from the current frame to the front end of the buffered data range. In practice, the present invention defines a Dean Zone at the front end of the buffered data range for the sake of smooth play after the FF search operation.

When the client player receives a user request for FF operation, it first checks to see if the wanted frame is within the valid FF zone. If yes, the wanted frame number is sent to the media server. The server will locate the S-frame that is nearest to the wanted frame and send the data of this S-frame (compressed) to the client. Once this data is received, the player decodes this S-frame and plays it. The playing process will continue with the data in the buffer.

When a REW request is received by the player, it will first check the local index sequence to see if a 'close-enough' S-frame can be found. If yes the nearest S-frame will be used to resume the video sequence. If no, a request is issued to the server to download an S-frame that is nearest to the wanted frame.

In both FF and REW operations, the downloaded S-frame is stored in client's local storage after it is used to resume a new video sequence.

This random search technique is referred to as being 'distributed' because both the server and the client provide partial data for the index sequence. Given a specific FF or REW request, the wanted S-frame could be found either in the local index sequence or in the server's index sequence. At the end of the play process, the user will have a complete set of S-frames for later

review purposes. Therefore, when the viewer watch the same video content for the second time, all FF and REW functions will be available locally.

A storyboard is a short – usually 2 or 3 minute -- summary of a movie, which shows the important pictures of a feature length movie. People usually want to get a general idea of a movie before ordering. The SVOD system allows the viewers to preview the storyboard of a movie to decide whether to order it or not. Another advantage of the storyboard is to allow viewers to fast forward/backward by storyboard unit instead of frame by frame. Moreover, some indexing can be utilized based on the storyboard and intelligent retrieval of movies can be realized.

The generation of a storyboard involves three steps. First of all, some scene change techniques are applied to segment a long movie into shorter video clips. After that, key frames are chosen from each video clip based on some low or medium level information, such as color, texture, or important objects in the scene. Later on, some higher-level semantic analysis can be applied to the segmented clips to group them into meaningful story units. When a customer wants to get a general idea of a certain movie, he can quickly browse the story units and if he is interested, he can dig into details by looking at key frames and each video clips.

Scalability is a very desirable option in streaming video application. The current streaming systems allow temporal scalability by dropping frames, and cut the wavelet bit-stream at a certain point to achieve spatial scalability. The present invention offers another scalability mode, which is called SNR and spatial scalability. This kind of scalability is very suitable for streaming video, since the videos are coded in base layer and enhancement layers. The server can decide to send different layers to different clients. If a client requires high quality videos, the server will send base layer stream and enhancement layer streams. Otherwise, when a client only wants medium quality videos, the server will just send the base layer to it. The video player is also able to decode scalable bit-stream according to the network traffic. Normally, the video player should display the video stream that the client asks for. However, when the network is really busy and the transmission speed is very slow, the client should notify the upstream server to only send the base layer bit-stream to relieve the network load.

After processing of the movie clips, scene change information and key frames are available, which can be used to popularize the movie database. Keywords, as well as visual content of key

frames, can be used as indices to search for the movies of interest. Keywords can be assigned to ...ovie clips by computer processing with human interaction. For example, the movies can be categorized into comedy, horror, scientific, history, music movies, and so on. The visual content of key frames, such as color, texture, and objects, should be extracted by automatic computer processing. Color and texture are relatively easy to deal with and the difficult task is how to extract objects from the natural scene. At present, the population process can be automatic or semi-automatic, where human operator may interfere.

After popularization, another embodiment of the present invention may allow customers to search for the movies they would like to watch. For example, they can specify the kind of movies, such as comedy, horror, or scientific movies. They can also choose to see a movie with certain characters they like, and so on. Basically, the intelligent retrieval capability allows them to find the movies they like in a much shorter time, which is very important for the customers.

Multicasting is an important feature of streaming video. It allows multiple users to share the limited network bandwidth. There are some scenarios that multicasting can be used with another embodiment of the present invention. The first case is a broadcasting program, where the same content is sent out at the same time to multiple customers. The second case is a pre-chosen program, where multiple customers may choose to watch the same program around the same time. The third case is when multiple customers order movies on demand, some of them happen to order the same movie around the same time. The last case may not happen frequently and another embodiment of the present invention shall focus on the first cases for the multicasting utilization. Basically, multicasting allows us to send one copy of encoded movie to a group of customers instead of sending one copy to each of them. It can greatly increase the server capability and make full use of network bandwidth.

Due to the combination of the present invention's DRFS technology and proprietary video compression performance, very high compression ratio can be achieved for high-quality content delivery. The following table gives an estimation of compression performance. (The estimation is based on frame size of 320x240 at 30 frames/sec.)

100-min Movie (Raw Data Size)	DVD quality (20:1)		VCD quality (40:1)		DAC quality (80:1)	
	Data Size	Download Time	Data Size	Download Time	Data Size	Download Time
19775 M	989 M	3956 Sec	495 M	1980 Sec	248 M	992 Sec

Note: 2Mbps channel bandwidth is assumed.

Bandwidth (Client)	Server Capability	Presentation Delay	Server Network	Transfer Control Protocol	Transfer Protocol
1.5Mbps	1.5Gbps	6 Minutes	Fiber/ATM	RTSP	RTP

Fast Forward/ Backward	Pause/ Stop/ Play	Storyboard	Scalability	Intelligent Movie Retrieval	High quality, smooth playback	Multicasting
Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 1. System Specifications

100-min Movie (Raw Data Size)	DVD quality (20:1)		VCD quality (40:1)		DAC quality (80:1)	
	Data Size	Download Time	Data Size	Download Time	Data Size	Download Time
19775 M	989 M	3956 Sec	495 M	1980 Sec	248 M	992 Sec

Table 2.

THE EMBODIMENTS OF THE PRESENT INVENTION IN WHICH AN EXCLUSIVE ROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method for providing enhanced features for streamed video content over a network comprising the steps of:

a) initializing a web server and a media server

b) providing a client player to the end user;

c) opening the streaming session;

d) streaming the coded video content bit steam between the media server and client player;

e) enabling the enhanced feature set to the end user for manipulation through the client player;

f) terminating the streaming session.

2. The method as defined in claim 1, wherein the video content has been encoded for compression using prior art H263 standards.

3. The method as defined in claim 1, wherein the audio content has been encoded for compression using prior art MP3 standards.

4. The method as defined in claim 1, wherein the video content has been pre-encoded deriving semantic content from the video to construct a searchable index of content features.

5. An apparatus for providing enhanced features for streamed video content over a network comprised of:

a web server and a media server

a client player offering an enhanced feature set to the end user;

means of initiating and maintaining and terminating a streaming session between the media server and client player.

6. The apparatus as defined in claim 1, wherein the video content has been encoded for compression using prior art H263 standards.

7. The apparatus as defined in claim 1, wherein the audio content has been encoded for compression using prior art MP3 standards.

o. The apparatus as defined in claim 1, wherein the video content has been pre-encoded deriving semantic content from the video to construct a searchable index of content features.

ABSTRACT

The present invention discloses a method and system for the provision of enhanced features in streamed video on demand (SVOD) over a network.

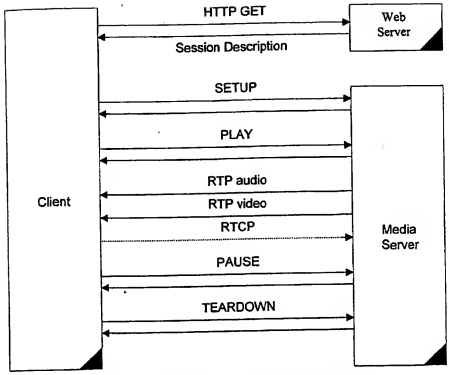

Figure 1. System structure of SVOD system

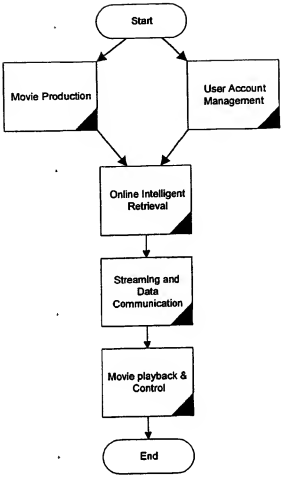

Figure 2. Flow chart of SVOD system

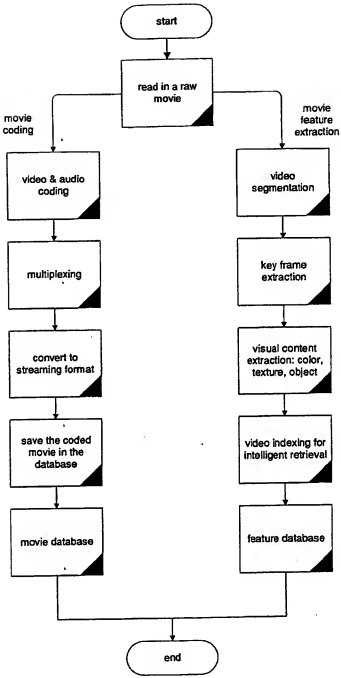

Figure 3. Movie Production

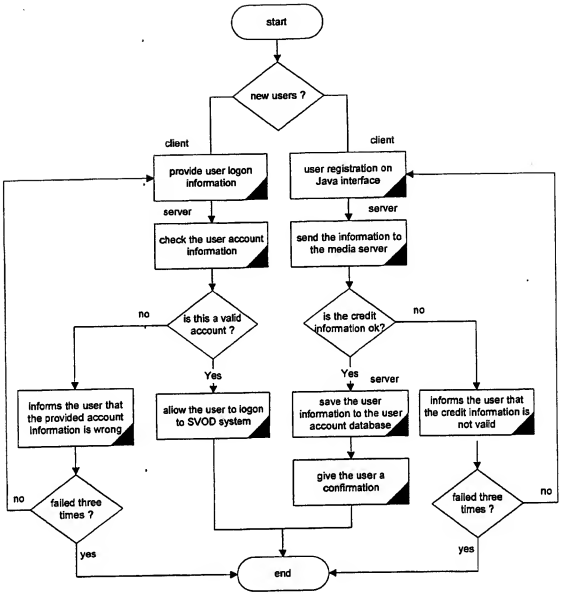

Figure 4. User account management

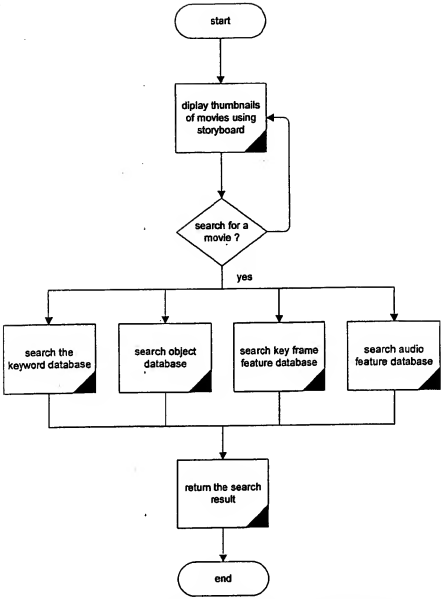

Figure 5. Online intelligent retrieval

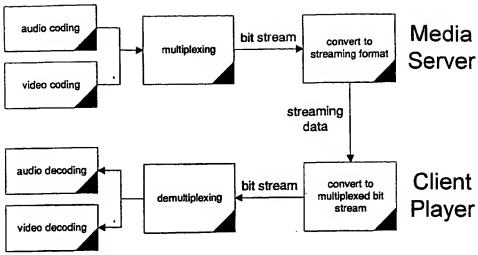

Figure 6.1 Streaming of movies from media server to client

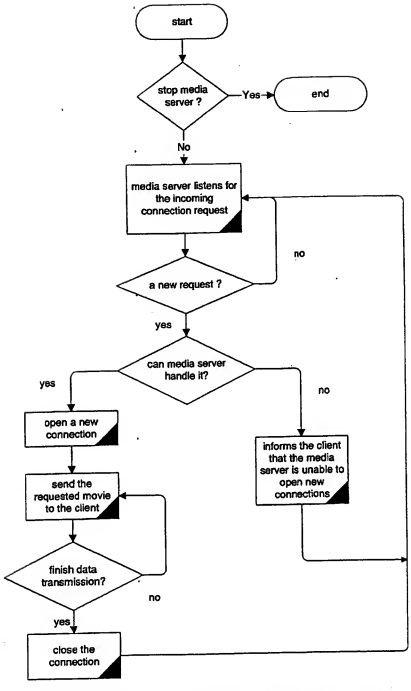

Figure 6.2 Data communication between media server and client player

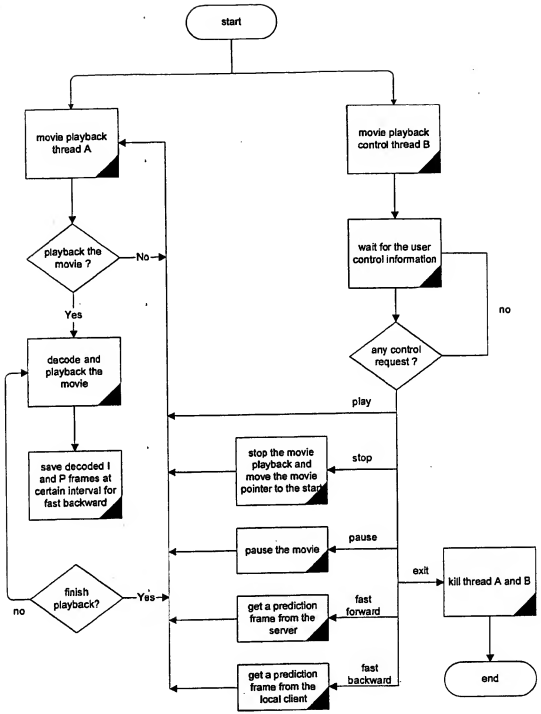

Figure 7. Movie playback and control

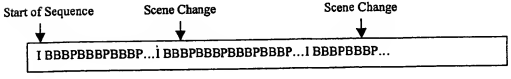

Figure 8.

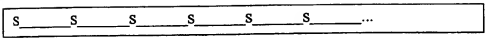

Figure 9.

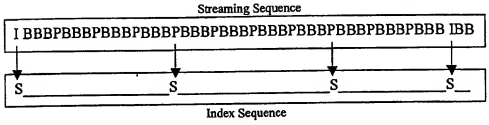

Figure 10.

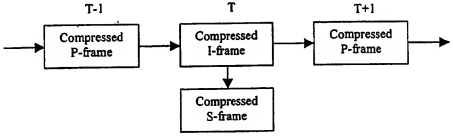

Figure 11.

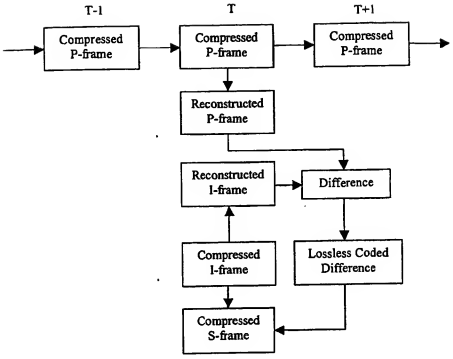

Figure 12.

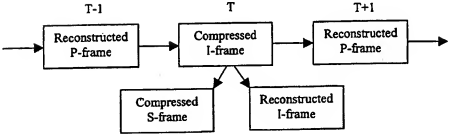

Figure 13.

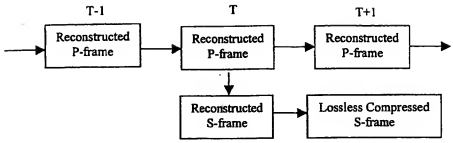

Figure 14.

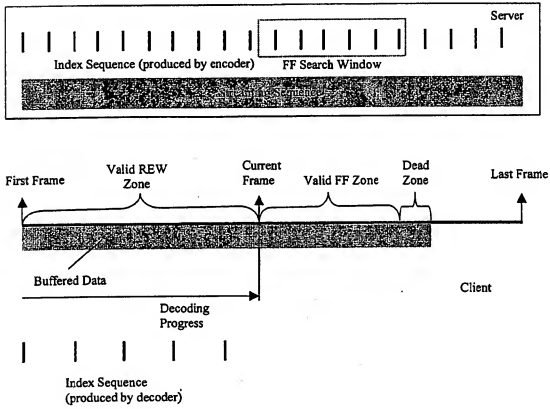

Figure 15.

IN THE UNITED STATES OF AMERICA
PATENT AND TRADEMARK OFFICE

APPLICANTS: MENG WANG
JIAN WANG
YING LUO
IGNATIUS CHING

TITLE: CONTROL MECHANISMS FOR ENHANCED FEATURES FOR STREAMING VIDEO ON DEMAND SYSTEMS

DOCKET NO.: 17557-0

BOX PATENT APPLICATION
COMMISSIONER FOR PATENTS
P. O. BOX 1450
ALEXANDRIA, VA 22313-1450

COMBINED DECLARATION AND POWER OF ATTORNEY (ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL, CONTINUATION, OR C-I-P)

As below named inventors, we hereby declare that:

TYPE OF DECLARATION

This declaration is of the following type:

(Check one applicable item below)

[X] original.
[ ] design.
[ ] supplemental.
[ ] national stage of PCT.
[ ] divisional.
[ ] continuation.
[ ] continuation-in-part (C-I-P).

INVENTORSHIP IDENTIFICATION

Our residence, post office address and citizenship are as stated below, next to our names. We believe that we are the original, first, joint, and sole inventors of

the subject matter that is claimed, and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

CONTROL MECHANISMS FOR ENHANCED FEATURES FOR STREAMING VIDEO ON DEMAND SYSTEMS

SPECIFICATION IDENTIFICATION

the specification of which:

(complete (a), (b) or (c))

(a) [ ] is attached hereto.

(b) [X] was filed on December 4, 2003, as [X] Serial No. 10/727,857 or [ ] _____ and was amended on _____ (if applicable).

(c) [ ] was described and claimed in PCT International Application No. _____, filed on _____ and as amended under PCT Article 19 on _____ (if any).

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

We hereby state that we have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. We acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56,

(also check the following items, if desired)

[X] and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and

[ ] in compliance with this duty, there is attached an information disclosure statement, in accordance with 37 CFR 1.98.

PRIORITY CLAIM (35 U.S.C. § 119(a)-(d))

We hereby claim foreign priority benefits under Title 35, United States code, § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

(complete (d) or (e))

(d) [X] no such applications have been filed.
(e) [ ] such applications have been filed as follows.

POWER OF ATTORNEY

We hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

RUSSEL O. PRIMEAUX, PTO REG. NUMBER 37,213;
HENRY E. NAYLOR, PTO REG. NUMBER 27,461; and
WILLIAM R. COENEN, III, PTO REG. NUMBER 48,239.

[ ] Attached, as part of this declaration and power of attorney, is the authorization of the above-named attorney(s) to accept and follow instructions from my representative(s).

SEND CORRESPONDENCE AND DIRECT TELEPHONE CALLS TO:

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DECLARATION

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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(if no further pages form a part of this Declaration,
then end this Declaration with this page
and check the following item)

[X] This declaration ends with this page.